71 Stevenson St.
Suite 400
San Francisco
California 94105
USA

P:800-764-8093
F:888-358-1339

EOS CLIMATE™

July 25, 2011

Clerk of the Board
Air Resources Board
Sacramento CA

RE: *Supplement to the AB 32 Scoping Plan Functional Equivalent Document*

Dear Sir or Madam:

EOS Climate is developing projects in the U.S. and globally for collection and destruction of ozone-depleting substances (ODS) that remain in older equipment and building infrastructure. We have pioneered ODS destruction as a verifiable emission reduction for greenhouse gas (GHG) markets, originating ISO-14064 conforming methodology, and deploying state-of-the-art technologies and creating an integrated system for collection, aggregation, processing, and destruction of ODS from older equipment. This system is designed to deliver a stable supply of the highest quality GHG emission reductions for both voluntary and compliance markets.

We congratulate the California Air Resources Board (ARB) staff for assembling a comprehensive program for California to meet the AB 32 targets while containing costs, providing flexibility, and maximizing the benefits to the economy and environment. We are offering comments on the issues raised in the June 13, 2011 Supplement to the AB 32 Scoping Plan Functional Equivalent Document ("the FED Supplement").

A Price on Carbon is Needed to Meet the AB 32 Goals

The suite of regulatory mandates issued or proposed under AB 32 is largely designed to expand deployment of currently available technologies and practices, and take into account currently understood technical, economic, and other practical limits. Even if these mandates can achieve the desired results, they are limited to specific sectors and are not expected to be enough to meet either the 2020 or longer- term targets.

As noted in the FED Supplement, there is consensus that some form of carbon pricing is needed to mobilize long-term investments in a broad array of transformative technologies and infrastructure. Only a price on carbon emissions would encourage both deployment of renewable and low-carbon power sources and technologies that would not have to pay the carbon price, and also discourage fossil fuel generation of energy, which would. This double-down effect makes a price on carbon the most effective policy solution to reduce/stabilize greenhouse gas emissions and transition California's economy to low carbon sources of energy.

Cap-and-Trade is the Best Policy to Establish a Price on Carbon

Cap-and-trade has been identified as the economically most efficient, and environmentally most certain, approach to bridge the gap that specific regulatory mandates cannot fill. The central

strength of a cap- and-trade system is that it provides incentives for low carbon technologies across the entire economy, while insuring that the "hard" caps are met (unlike a tax) at the lowest cost. A recent study found that a tradable permit system compared to a carbon tax, incentivizes earlier action, at lower cost.[1]

While many in the academic economic community believe that carbon taxes are just as efficient in achieving these objectives, carbon taxes do not adhere to hard, enforceable caps, and emissions can continue to rise in a growing, or less efficient economy. Only a hard cap ensures adherence to emission reduction targets while providing flexibility in how those targets are met.

Cap-and-trade cannot be substituted with a higher RPS

More aggressive regulations could theoretically be imposed on paper, e.g., an RPS of 40% instead of the current target of 33% by 2020. While we expect that renewable power will contribute a large proportion of the emission reductions, in principle rules that mandate specific and possibly overly ambitious technology targets could actually stifle innovation over time and drive up the costs of the overall program.[2] Further, there is no guarantee that the targets will be achieved, based on numerous examples of RPS targets slipping or being rolled back over time.

Cap-and-trade programs, by contrast, have demonstrated virtually 100% compliance with targets, as companies struggling to meet their targets can buy surplus reductions in the market from other companies that outperform. A properly designed and operating cap and trade system would create incentives for greater deployment and improvements in all forms of low carbon technologies, including renewable power.

On a more fundamental level, replacing cap-and-trade with new regulatory requirements would introduce regulatory uncertainty just as AB 32 is poised to go into effect. Private investment in California clean technologies -- drawn to the State by the prospects of a robust price on carbon -- would freeze, or be driven out of state. As voiced by many California business leaders during the Proposition 23 debate and more recently, the full AB 32 program including cap-and-trade provides incentives for renewable energy, transportation fuels, batteries, building materials, and dozens of other sectors that are the engines of California's economic revitalization.

Cap-and-trade works when properly designed

The original US cap-and-trade system to address acid rain has had a 20-year record of success. This program, as any cap-and-trade system, created incentives that turned pollution reductions into marketable assets, harnessing private capital and driving technological and process innovations down to and beyond required levels. The Midwestern and Eastern power plants covered under the EPA acid rain cap-and-trade program achieved full compliance, and even exceeded the targets for sulfur dioxide emission reductions, at a cost that was 70-80% below the original estimates from EPA and OMB.

In contrast, the first phase of the European Union Emissions Trading System, which ran from 2005-2008, had limited effectiveness due to over-allocation of permits. This was a regulatory design flaw because the Europeans had not been able to do a hard verification of emissions from capped entities before setting their targets. This was corrected for the second phase, now

[1] Chen and Tseng (2011) Inducing Clean Technology in the Electricity Sector: Tradable Permits or Carbon Tax Policies? Energy Journal 32:6-20.
[2] Morris, J. (2009) Combining a Renewable Portfolio Standard with a Cap-and-Trade Policy: A General Equilibrium Analysis. Cambridge: Massachusetts Institute of Technology.

underway through 2012. California will not repeat this mistake because ARB has had a mandatory emissions reporting requirement in place since 2007; the requirement will form the basis for setting (and adjusting) the AB 32 allowance targets. ARB will mitigate any additional potential for price volatility through a price containment reserve account with a price floor.

Other "failures" of the European experience with cap-and-trade, such as breaches into computerized accounts and sale of stolen allowances, are likewise a result of design flaws, botched execution, or having 27 different systems for each of the EU members. Several U.S. states have operated renewable energy credit (REC) and voluntary emission reduction (VER) registries without any instances of fraud or theft. We have every confidence that ARB has learned the lessons from the EU, and will create a secure system with careful policing and oversight, allowing for a fair, efficient, and cost-optimizing market.

Finally, unlike the new institutions in the EU and elsewhere developed to implement the Kyoto Protocol, the California Air Resources Board is a strong and experienced regulator, with extensive enforcement powers. California is learning not only from the EU experience, but also from analyses of federal GHG emission trading legislation, the Western Climate Initiative (WCI), the Regional Greenhouse Gas Initiative, the British Columbia carbon tax, and the US acid rain program.

Cap-and-trade can provide advantages for California's economy

AB 32 provides California the impetus to lead an inevitable national and global transition to a clean energy economy. In a recent article titled "Cap-and-trade is the way forward" the Silicon Valley Leadership Group[3] states that:

"Since 2006, AB32 has spurred more than $9 billion in investment in clean energy, helping spawn 12,000 businesses and thousands of new patents. According to the Wall Street Journal, California is home to seven of the top 10 clean-tech businesses in the United States and, according to the New York Times, five of the top 10 cities for clean-tech jobs are in California. As a result, Silicon Valley Leadership Group members Sunpower, Applied Materials, Serious Materials and Solaria are creating jobs in R&D, design, production, sales and installation. In fact, clean tech is one of the leading bright spots in our economy."

The best, and we think, the only way to insure that this trend continues, and that California reaps economic advantages, is by incorporating a cap-and-trade system:

- Cap-and-trade insures that the emission targets are met at the lowest cost, with maximum flexibility to capped emitters.
- Under cap-and-trade, all sectors of the economy, not just electricity generation or transportation - are incentivized to innovate and deploy low carbon technologies and processes, which will allow California to maintain its competitive edge.
- Cap-and-trade is the only mechanism by which California can link to GHG initiatives in other regions and countries, such as WCI, or bilateral agreements with states and provinces in Mexico, Brazil, China, and Indonesia. Eighty-nine countries now have some form of carbon emission target, including emerging economies. Linking to initiatives outside the state will help spread any economic burden with other like-minded regions and also helps California gain economic value via exchange of technologies and services with these different programs.

[3] Mike Mielke, SF Chronicle, June 1, 2011

- In addition to driving innovations and investments in clean technology businesses, an AB 32 emissions trading system will add economic value to California by creating a new financial center here for North American GHG markets.

Cap-and-trade does not penalize at-risk populations

The question of whether cap-and-trade is regressive has gained traction based on the assumption that cap- and-trade unto itself will raise energy prices. Most analyses have estimated that in the near-term, implementation of AB 32 will increase energy costs, but that over the long-term, Californians will save money as a result of efficiency improvements and as costs for clean energy technologies achieve parity with power from fossil fuels. None of these analyses identify cap-and trade as the source for the short- term increases in costs. Just the opposite, it is widely acknowledged that cap-and-trade minimizes the costs of climate mitigation.

Under either a carbon tax or cap-and-trade, "carbon revenue" can be returned, with legislative approval, to middle- and low-income households who bear the brunt of higher fuel and electricity costs ("cap-and- dividend" has been proposed at the federal level). The ARB and the California Public Utilities Commission have designed the cap-and-trade program precisely with this objective in mind, ensuring that the State's utilities receive free allocation of allowances that they are restricted to using specifically to offset any increased cost of fossil fuel generation sold by capped power generators.

Another concern is that if some firms and facilities with high costs can purchase permits, rather than reduce their emissions, this will create heavily polluted "hot spots" in low-income and minority communities. At a fundamental level, power plants, refineries, and other capped emitters will not be able to increase their emissions of conventional pollutants which are already subject to extensive air, water, and waste permits under federal, state, county, and district laws and regulations. If current limits on conventional pollutants need to be re-evaluated, AB 32 is not the relevant arena. Regarding the potential for CO2 hot spots related to AB 32 cap-and-trade, a recent study of the acid rain program, the most established cap-and-trade system in the U.S., provides relevant data.[4] The study analyzed trading records for all facilities participating between January 1995 and March 2009 and found that the program did not concentrate SO2 emissions in poor communities, and that actually poor communities with high percentages of African-American and Hispanic residents experienced fewer imports of SO2 than did other areas.

Of course, doing nothing about climate change will have broad impacts on public health in California -- infectious and respiratory disease, heat illness, water shortages -- hitting the elderly, children, and those in lower income groups the hardest.[5]

California's cap-and-trade system will be enforceable to achieve real environmental results

Monitoring, reporting, and verification are at the heart of cap-and-trade. Each ton of a large emitters' GHG footprint, as well as each and every offset, must be independently verified by

[4] Rinquist, E. (2011). "Trading Equity for Efficiency in Environmental Protection? Environmental Justice Effects from the SO2 Allowance Trading Program," Social Science Quarterly 92:297-323.
[5] Public Health Impacts of Climate Change in California: Community Vulnerability Assessments and Adaptation Strategies. California Department of Public Health and the Public Health Institute (2007).

accredited environmental auditors. Emitters will be subject to significant penalties for either exceeding their caps or inaccurate reporting.

We expect that ARB will continue to take an active role in design and enforcement of the program. A properly designed cap-and-trade system requires relatively routine administrative oversight (in contrast, a carbon tax requires periodic review and adjustments of the tax level to insure that emission reductions targets are being met, subject to legislative approvals and likely political interference). Once regulations and guidelines are in place, accredited third parties are incentivized to maintain a functioning, transparent market and will manage much of the day-to-day operations. In addition, through the Climate Action Reserve, California has access to a world class, specialized network of third-party verifiers and a training/certification system that can provide program support for AB 32 as appropriate. Finally, much of the concern around speculative trading and market manipulation in the carbon market will be addressed by the broader reforms to commodities and derivatives regulations being undertaken at the federal level under the recently passed Dodd-Frank legislation.

We believe that ARB's recent decision to delay compliance obligations until 2013 will fully insure proper development of the market infrastructure and oversight mechanisms.

Offsets do not allow emitters to pay their way to compliance so they can continue to pollute

Offsets will serve a relatively minor role in achieving the AB 32 target. The ARB regulations allow capped sources to use offsets to meet up to 8 percent of their compliance obligations, thus limiting the room for maneuver around the caps.

Offsets represent GHG reductions that have multiple benefits:

- Offset credits are generated from sources or sinks of emissions not directly covered under the cap- and-trade program. This incentivizes technology and economic change in sectors such as agriculture, forestry, and appliance recyclers.
- Offsets provide additional low-cost abatement options to covered entities and prevent unanticipated cost increases and adverse impacts on the economy.
- Offsets reward early actions undertaken by proactive companies and organizations, and help prime the market with a steady supply of compliance credits at the start of the program.

Offsets represent real GHG reductions and do not "dilute" the cap

There are approximately 160 offset types that have been approved under the Kyoto Protocol's Clean Development Mechanism; by contrast, the 2010 ARB regulations list only four offset types as eligible under AB 32. The ARB has identified these as representing GHG reductions that are most certain to be real, permanent, additional, and enforceable.

ARB's offset regulations have rigorous requirements governing quantification protocols, monitoring and reporting, independent verification. In the small likelihood that a project, after approval, is found to have inadequate documentation, ARB has rules governing invalidation of the credits. ARB and the offsets industry are considering additional layers of protection such as a "compliance buffer account" or some other form of insurance for any credits that are invalidated.

We have particular familiarity with destruction of ozone-depleting substances (ODS) for which EOS Climate originated the ISO 14064-2 methodology that was adopted by the Climate Action Reserve (CAR). As for the other project types – forestry and agricultural methane - both CAR and ARB conducted extensive peer- and public-reviews of the protocols. All projects under CAR have been, and under AB 32 will be, subject to rigorous end-to-end tracking and continuous monitoring, and rigorous third party verification and certification.

Without a price on carbon, chlorofluorocarbons and other ODS refrigerants are recycled back into old leaky, inefficient refrigeration and air conditioning equipment, or vented, either way reaching the atmosphere within a few years. Instead, we are creating incentives to accelerate retirement of the older equipment, and accelerate deployment of more advanced, efficient, climate-friendly technologies for use in commercial, residential, and industrial applications. Our projects demonstrate that these offsets represent real, permanent GHG reductions - through destruction of ODS – and that a price on carbon directly drives technological change to a more sustainable, cleaner infrastructure, with multiple co- benefits.

Summary

The recent report to Congress on "America's Climate Choices" by the National Research Council recommended that the US adopt an economy-wide carbon pricing mechanism to limit future climate change. The report also concluded that the cap-and-trade system is more compatible and transparent in meeting and monitoring progress with an emissions budget, and "is likely to be more durable over time since those receiving emission allowances have a valued asset that they will likely seek to retain.[6]

Specific to California, Robert Stavins, Director of Environmental Economics at Harvard's Kennedy School of Government, recently wrote, "beyond helping the state meet its emissions-reduction targets at the lowest cost, [cap-and trade] offers a promising way to reduce economic burdens on low-income and minority communities."[7]

Under a cap-and-trade system, any technology, company, individual, or investment strategy that reduces greenhouse gas emissions and that can be verified will be incentivized. We are confident that the program that ARB has established will have the highest levels of performance, transparency, enforcement, and integrity. For California, a cap-and-trade system can directly harness the entrepreneurial energy of the State's companies and people and channel them towards searching for emissions reductions and developing the next generation of clean technologies. In doing so, California will mobilize the next wave of innovations across all sectors of the low carbon economy.

We applaud the efforts by ARB to continue to provide leadership for the nation and rest of the world to integrate practical considerations and the best science to establish effective climate policy. We would be glad to provide additional information as needed.

Sincerely,

Jeff Cohen,
Senior Vice President, Science & Policy

[6] Limiting the Magnitude of Future Climate Change, National Research Council (2010).
[7] Stavins "Why the lawsuit against California's climate law is misguided". Carbon Market North America, June 3, 2011.