

FEATURE ARTICLE**THE CALIFORNIA GLOBAL WARMING SOLUTIONS ACT OF 2006—
TAKING ON GLOBAL WARMING BY LEGISLATING
REDUCTIONS IN GREENHOUSE EMISSIONS**

By Seth Hilton

Setting aside the fierce debates concerning global warming, California has stepped forward to lead the charge on reducing greenhouse gas emissions. On September 27, 2006, Governor Arnold Schwarzenegger signed AB 32, the California Global Warming Solutions Act of 2006, which mandates that California reduce its greenhouse gas emissions to 1990 levels by 2020, a reduction of approximately 25 percent. California's lead on decreasing greenhouse gas emissions gives it the opportunity to become the model if and when greenhouse gas emissions reductions are adopted in other states, or at the federal level. A failure in California, however, could have the same effect as California's disastrous efforts at electricity deregulation—other states pursuing such efforts could abandon them in an effort to avoid California's fate.

A Brief Overview of AB 32

AB 32 provides little detail of how the state is to reach 1990 emissions levels by 2020. Instead, the chief implementing agency, the California Air Resources Board (CARB) will bear the responsibility for developing regulations and other measures that will allow California to reach that goal. This assignment will amount to a substantial growth in CARB's authority, and will require a dramatic increase in the size of the organization. Current estimates are that CARB will require somewhere between 100 and 167 additional personnel; under discussion is whether greenhouse gas emissions regulation will become a separate division within CARB.

Though the Global Warming Solutions Act does not provide many specifics concerning how CARB is to reduce greenhouse gas emissions, it does provide a series of deadlines for CARB to meet its obligations under AB 32. One of the first steps CARB must take is to establish regulations requiring the reporting and verification of statewide greenhouse gas emissions. These regulations must be adopted before January 1, 2008, although the statute does not specify when the regulations are to go into effect. The statute specifies that the regulations must require the monitoring and annual reporting of greenhouse gas emissions from emissions sources, starting with the sources or categories of sources that contribute the most to statewide emissions. For electricity generation, which contributes approximately 20 percent of the greenhouse gas emissions in California, AB 32 contains a number of specific requirements concerning emissions monitoring and reporting. First, it requires that the regulations account for emissions both from generation and from transmission and distribution line losses. Second, the regulations must also account for emissions from all generation used to serve load within the state, regardless of whether it is generated within the state or imported from outside the state. These requirements will apply to all retail sellers of electricity, including energy service providers and local publicly owned utilities.

In developing these guidelines, CARB is to be guided by already existing reporting requirements and guidelines on the international, federal, and state level. First, CARB is required to incorporate the

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standards and protocols developed by the California Climate Action Registry. Second, CARB must review all existing and proposed international, federal and state greenhouse gas emission reporting programs and make reasonable efforts to promote consistency between the programs, and to streamline reporting requirements on greenhouse gas emissions sources.

Also by January 1, 2008, CARB must make a determination as to what the statewide greenhouse gas emissions level was in 1990 and approve a statewide greenhouse gas emissions limit that is equivalent to that level. Under AB 32, that limit must be achieved by 2020 and will continue in existence after 2020 unless and until that limit is amended or repealed by the legislature.

CARB must also develop regulations to achieve the "maximum technologically feasible and cost-effective greenhouse gas emissions reductions" so that the state can meet the 2020 emissions cap deadline. These regulations are to be developed in two stages. By June 30, 2007, CARB is required to publish a list of potential "early action" greenhouse gas reduction measures. By January 1, 2010, CARB must adopt regulations to implement these early action measures; the regulations must become effective on or before that same date. These early action measures are designed to address concerns that waiting to implement a more comprehensive set of regulations would hamper the state's ability to meet its 2020 deadline.

Simultaneously with its efforts on early action measures, CARB will be developing a comprehensive plan for reducing emissions to 1990 levels. By January 1, 2009, CARB is to prepare a "scoping plan," which will "identify and make recommendations on direct emission reduction measures, alternative compliance mechanisms, market-based compliance mechanisms, and potential monetary and non-monetary incentives" that are necessary or desirable to achieve the maximum feasible and cost-effective reductions by 2020. By January 1, 2011, CARB must adopt regulations to implement its emissions reduction plan, and those regulations must go into effect on or before January 1, 2012.

There is one caveat to this implementation timeline. One frequent objection raised to AB 32 is that it will inflict significant economic harm to the state.

To address these concerns, a provision was added to AB 32 that allows the governor's office to extend the deadlines for individual regulations, or for the state in the aggregate, in the event of "extraordinary circumstances, catastrophic events, or threat of significant economic harm." The extension may not exceed one year.

Market-Based Compliance Mechanisms

Among the many important issues that CARB will consider in preparing its scoping plan is whether to include market-based compliance mechanisms such as a "cap-and-trade" program. Under a market-based cap-and-trade program, an overall cap on emissions levels is set for specified sources. A certain number of allowances to emit are distributed or sold to sources, which may use those allowances to cover their emissions, or sell those allowances to other entities.

There was considerable opposition from environmental justice groups to including a market-based compliance mechanism such as a cap-and-trade program in AB 32. Ultimately, the decision of whether to implement a market-based compliance program was left up to CARB. AB 32 gives CARB the authority to establish a market-based compliance mechanism, defined as including emissions exchanges, banking, credits, or other transactions, if it chooses to do so. Although the conventional wisdom is that CARB will in fact adopt such a mechanism, there is no reason to think that the environmental justice groups that so vociferously opposed a market-based compliance mechanism at the legislature will be content to sit by silently as CARB implements such a program. Furthermore, AB 32 provides that by July 1, 2007 CARB shall convene an environmental justice advisory committee of at least three members who will advise CARB on development of the scoping plan. The advisory committee is to be composed of representatives from communities in the state with "the most significant exposure to air pollution," and members are to be appointed from nominations received from "environmental justice organizations and community groups." That committee will give the environmental justice groups an additional platform from which to oppose implementation of market-based compliance mechanisms.

Major Sources of California's Greenhouse Gas Emissions

AB 32 does not specify which sources of greenhouse gas emissions are to be targeted. Instead, the legislation defines the sources that may be regulated as:

[a]ny source or category of source whose emissions are at a level of significance... that its participation in the program... will enable [CARB] to effectively reduce greenhouse gas emissions and monitor compliance with the statewide greenhouse gas emissions limits.

Thus CARB is free to pick and choose which sources it will regulate to achieve the required reductions. It is logical to assume, however, that CARB will focus first on the largest sources of emissions.

The largest source of greenhouse gas emissions in California is transportation. Transportation sources comprise about 42 percent of California's total greenhouse gas emissions. Industrial sources produced 22 percent of California's greenhouse gas emissions, and electricity generation is a close third, producing 20 percent of California's greenhouse gas emissions. Agricultural and forestry sources accounted for eight percent of greenhouse gas emissions. Across these sources, 81 percent of California's greenhouse gas emissions are CO₂ emissions resulting from fossil fuel combustion. In addition to these figures, California's Climate Action Team has identified five key sources that together contribute up to 30 percent of California's greenhouse gas emissions: electricity generation, oil refining, oil and gas extraction, solid waste landfills, and cement manufacturing. These five sources will likely be a focus of CARB's efforts to reduce greenhouse gas emissions under its mandate from AB 32.

Transportation

Although transportation sources are the largest source of greenhouse gas emissions, significant regulation of these sources is unlikely to be made through AB 32. In 2002, the California Legislature adopted AB 1493, which required CARB to develop greenhouse gas emissions standards for automobiles. AB 1493 required that CARB adopt "the maximum

feasible and cost-effective reduction of greenhouse gas emissions" from motor vehicles. The regulations were to be adopted no later than January 1, 2005, but could not take effect before January 1, 2006, to allow the legislature time to review the regulations and determine whether further legislation should be enacted before the effective date of the regulations. The regulations were to apply only to vehicles manufactured in the 2009 model year, or any model year thereafter. CARB adopted those regulations on September 24, 2004, and chose the earliest possible effective date of January 1, 2006. Those regulations proposed to reduce greenhouse gas emissions from cars and light trucks by 25 percent, and from sport utility vehicles by 18 percent.

However, in December 2004, the Alliance of Automobile Manufacturers (Alliance) filed a lawsuit against CARB in federal court, challenging AB 1493. The Alliance was later joined by the Association of International Automobile Manufacturers. The automakers claimed that the regulations are preempted by federal law and interfere with the federal government's ability to conduct foreign policy. That lawsuit is still pending, with trial currently scheduled to begin on January 30, 2007. The outcome of that trial will determine to what extent a reduction in transportation emissions can be part of the solution to meeting the 2020 goal, or whether CARB will be forced to focus on other solutions.

Industrial Sources

Also high on the list of potential targets for regulation are cement manufacturing, oil refining, and oil and gas extraction. These three industries are major sources of greenhouse gas emissions. California has 11 cement plants that contribute approximately one and a half percent of California's greenhouse gas emissions. Oil refining (21 refineries) and oil and gas extraction (429 facilities) each are responsible for three percent of California's greenhouse gas emissions. Regulation of these sources could take a variety of forms, including emissions caps, implementation of a market-based cap and trade system, or technological mandates.

Attempts to regulate these entities, however, may create incentives for them to shift their operations to other states. AB 32 specifically requires CARB to minimize leakage, defined as:

a reduction in emissions of greenhouse gases within the state that is offset by an increase in emissions of greenhouse gases outside the state.

For example, a cement manufacturer, already burdened by extremely high electricity rates, may decide to shift its operations across the California border to a neighboring state in response to significant regulation of its greenhouse gas emissions, such as the establishment of a cap-and-trade program. Alternatively, heavily regulated sources may simply decide to shut down their California operations altogether. This effect may be exacerbated for oil and gas extraction operations, which would be subject to a new severance tax if Proposition 87 passes in November 2006. Because operations may shift to other states, California may suffer injury to its economy while failing to accomplish any net reduction in greenhouse gas emissions (or avoiding the consequences of those emissions).

Electricity Generation

Like transportation emissions, California has adopted legislation that specifically targets electricity generation emissions. Two days after he signed AB 32, Governor Schwarzenegger signed SB 1368, which bars any electric utility (as well as energy service providers and community choice aggregators) from entering into a new ownership investment in baseload generation or a new or renewed contract for a term of five or more years for the procurement of baseload generation, unless that baseload generation complies with the greenhouse gas emissions performance standard. That standard, to be developed by the California Public Utilities Commission (PUC) for utilities, energy service providers, and community choice aggregators, and by the California Energy Commission (CEC) for local publicly-owned utilities, cannot be any higher than the greenhouse gas emissions rate from a baseload combined-cycle natural-gas-fired plant. The statute defines "baseload generation" as generation from a power plant that is designed and intended to provide electricity at an annualized plant capacity factor of at least 60 percent. All combined-cycle natural-gas power plants that are currently in operation, or that have a CEC final permit decision to operate as of June 30, 2007, are deemed in compliance.

SB 1368 requires that the PUC establish its emissions performance standard on or before February 1, 2007. The PUC is in fact well on its way to developing the standard. In April 2006, well before the passage of SB 1368, the PUC instituted a rulemaking to consider the adoption and implementation of an emissions performance standard for utilities and other load-serving entities. The PUC staff has conducted a series of workshops on the proposed emissions standard, and issued a final recommendation for that emissions standard on October 2, 2006. The staff's proposal calculates the emissions standard based on the performance of a combined-cycle gas turbine, and sets the standard at 1100 pounds of CO₂ per megawatt hour. This standard would be applicable to all baseload generation where 25 megawatts or greater are delivered to the grid. The staff also proposed that the PUC consider creating exceptions for higher-emitting facilities for research and development purposes, or for reliability purposes.

The CEC is tasked with establishing the emissions standard for local publicly owned utilities by June 30, 2007. In contrast to the PUC, the CEC has not yet initiated a rulemaking to develop the emissions standard. Yet SB 1368 requires that the PUC's emissions standard and the CEC's emissions standard be "consistent." Thus whatever the PUC adopts will arguably limit the options the CEC may consider in developing its own standard.

AB 32 will likely have additional effects on electricity generation beyond the limits imposed by SB 1368. AB 32 is somewhat vague regarding who has the authority to regulate electricity generation emissions, and requires CARB to consult with the PUC and the CEC on all elements of its plan that pertain to energy related matters, including electricity generation. As noted above, however, SB 1368 applies only to baseload generation, and it is certainly possible that CARB, in consultation with the PUC and the CEC, would seek to impose additional restrictions on electricity generation that did not meet the baseload definition.

Even if CARB chooses to further regulate electricity generation, there are questions concerning how much reduction could be achieved. California already has a relatively clean power generation fleet. Coal-fired generation supplies only a small portion of the power for California's three major utilities, varying

from three percent for Pacific Gas and Electric to about 15 percent for San Diego Gas and Electric. Forty percent of California's electricity is generated by natural-gas-fired generation, the cleanest of the fossil fuels. The same day the California Legislature passed AB 32 and SB 1368, it also passed SB 107, which requires California utilities to meet 20 percent of their electricity load with renewable energy by 2010 (California had in 2002 adopted legislation that required the utilities to meet that same goal by 2017). Governor Schwarzenegger has proposed that the state achieve 33 percent renewable penetration by 2020. However, serious questions remain as to whether California can build the transmission infrastructure needed to reach those goals. Many renewable resources are located in remote areas, such as the wind resource area in Tehachapi and the geothermal resource area in Imperial Valley, and substantial transmission projects are needed to link these resources to the grid. Nuclear power is another option, as it produces no greenhouse gas emissions, but California law currently prohibits the construction of new nuclear plants until a permanent nuclear waste repository is developed. Other concerns also inhibit California's ability to develop cleaner sources of power generation. For example, although hydropower provides emissions-free generation, California does not count large hydro projects toward the utilities' obligation to procure renewable power because of concerns about the effects such projects have on plant and animal habitat.

Alternatively, CARB or other responsible entities may choose to focus on energy efficiency measures as well, a tactic that California has successfully employed in the past. California has been able to hold its per-capita energy consumption almost level for

approximately 30 years, while the rest of the nation's per-capita consumption has steadily increased. Further improvements in energy efficiency may allow for significant reductions in greenhouse gas emissions. For example, the CEC's 2004 energy efficiency goals, if met, will result in a reduction of over 14 million tons of greenhouse gas emissions by 2020.

Agricultural and Forest Practices

As mentioned above, agricultural and forest practices account for eight percent of California's greenhouse gas emissions. Regulation in this area, however, may focus less on emissions caps or reductions, and more on using forest management projects as emissions offsets. Under a market-based compliance regime, offsets are verified emissions reductions by entities that are outside the cap. These verified reductions can be sold to sources under the cap as a means of complying with their emissions limit. Offsets can help lower the cost of emissions, as well as create financial incentives for low-cost emissions reduction projects for sources outside a cap.

Conclusion and Implications

Although California has established the framework for developing regulations to significantly curtail its greenhouse gas emissions, it will be several years before the details of how California will achieve its reduction goals will be finalized in the various regulatory agencies responsible for implementation of AB 32. California's experience, however, will undoubtedly have a profound effect on how greenhouse gas emissions are regulated in the future. Whether California serves as a model or a warning remains to be seen.

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