



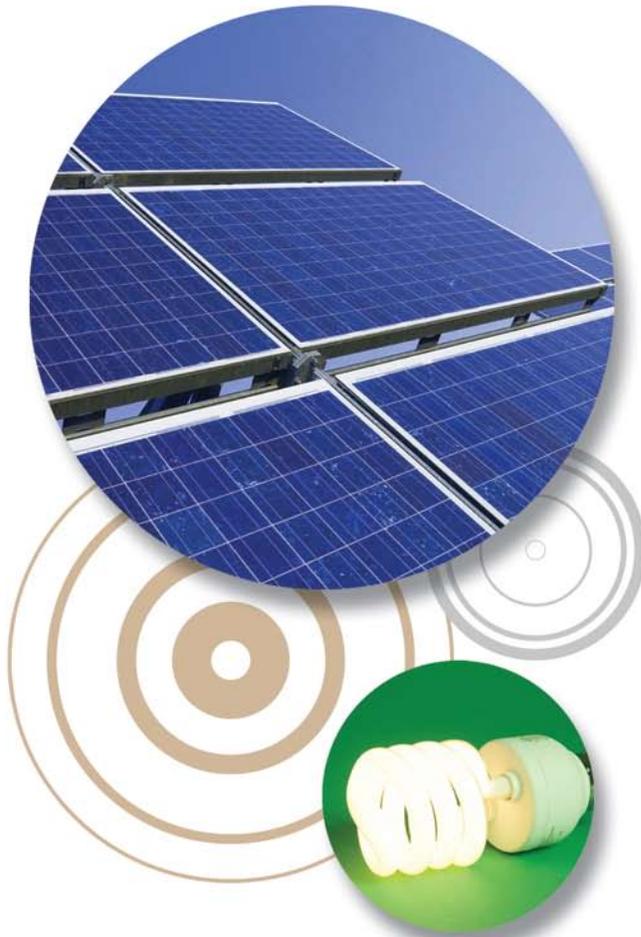
PROPOSED FINAL OPINION SUMMARY

ON GREENHOUSE GAS REGULATORY STRATEGIES

California Energy Commission & California Public Utilities Commission
Arnold Schwarzenegger, Governor, State of California
September 2008

DISCLAIMER

The *Proposed Final Opinion on Greenhouse Gas Regulatory Strategies* has been prepared by President Michael Peevey, California Public Utilities Commission as assigned Commissioner, and Chairman Jackalyne Pfannenstiel and Commissioner Jeffrey Byron, of the AB 32 Implementation Committee, California Energy Commission. This proposed report neither represents the views of the California Public Utilities Commission or the California Energy Commission nor have the Commissions approved or disapproved its contents.



Summary of Proposed Final Opinion on Greenhouse Gas Policies

The Global Warming Solutions Act of 2006 (Assembly Bill 32) caps California's greenhouse gas (GHG) emissions at the 1990 level by 2020. Meeting this target represents an 11 percent reduction from current levels and requires about a 29 percent cut in emissions below projected 2020 levels. AB 32 directed the California Air Resources Board (ARB) to adopt a GHG emissions cap on all major sources to reduce statewide emissions to 1990 levels by 2020.

The electricity and natural gas sectors will play a critical role in achieving this ambitious goal. The ARB's *Climate Change Draft Scoping Plan* envisions that the electric sector will contribute at least 40 percent of the total direct greenhouse gas reductions even though the sector accounts for just 25 percent of California's GHG emissions. Further reductions are projected to come from the electric sector if a cap-and-trade program is adopted and implemented.

The California Energy Commission and the California Public Utilities Commission have undertaken a collaborative proceeding to develop and provide recommendations to the ARB on measures and strategies for reducing GHG emissions from the electricity and natural gas sectors. The *Proposed Final Opinion on Greenhouse Gas Regulatory Strategies (Proposed Final Opinion)* that was released for comment on September 12, 2008 offers those recommendations in draft form, sponsored by Public Utilities Commission President Peevey and Energy Commission Chairman Pfannenstiel and Commissioner Byron. Final recommendations will be on the public meeting agendas on October 16 for both Commissions after taking into account comments from parties to the proceedings. This document presents background and context for the proceeding and summarizes the recommendations contained in the *Proposed Final Opinion*.

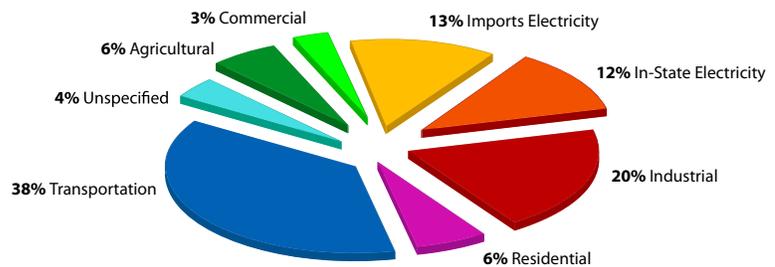
Background

California's large and growing GHG emissions contribute significantly to climate change. In 2004, California produced almost 500 million metric tons of carbon dioxide (CO₂) equivalent, making the state the second largest emitter of GHG emissions in the United States, after Texas, and about twelfth in the world. Eighty-nine percent of California's greenhouse gas emissions are from CO₂ while the remaining gases include methane, nitrous oxide and other man-made gases. According to a recent poll by the Public Policy Institute of California, over half (52 percent) of residents surveyed said that global warming is a very serious threat to the state's economy and quality of life and 64 percent say its effects have already begun.¹

Electricity generation is California's second largest source of GHG emissions, after the transportation sector. In 2004, it accounted for approximately 25 percent of the state's GHG emissions while transportation produced more than 38 percent of California's total emissions (Figure 1). Nationwide, the electric sector is the largest emitter, accounting for 33.7 percent of GHG emissions in 2006.² California's relatively clean generation mix, particularly our limited use of coal-fired power, is the principal reason for this difference.

California's extensive electricity system produces over 290,000 gigawatt hours each year transported over the state's 32,000 miles of

Figure 1
CALIFORNIA GREENHOUSE GAS EMISSIONS IN 2004

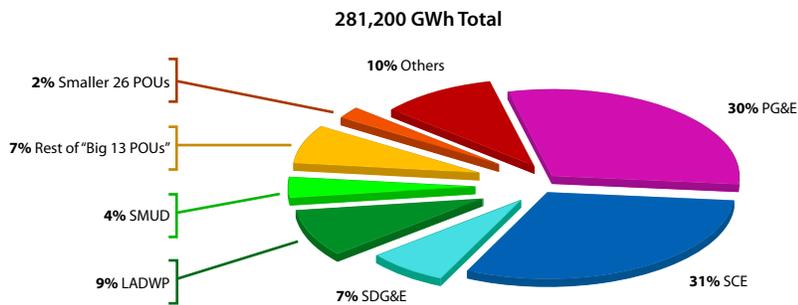


SOURCE: 2007 INTEGRATED ENERGY POLICY REPORT

1 Public Policy Institute of California, Statewide Survey, July 2008: Californians and the Environment

2 U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990–2006*, April 2008, page ES-7.

Figure 2
INVESTOR AND PUBLICLY OWNED UTILITY SHARES OF CALIFORNIA'S ELECTRICITY CONSUMPTION – 2007



SOURCE: 2007 INTEGRATED ENERGY POLICY REPORT

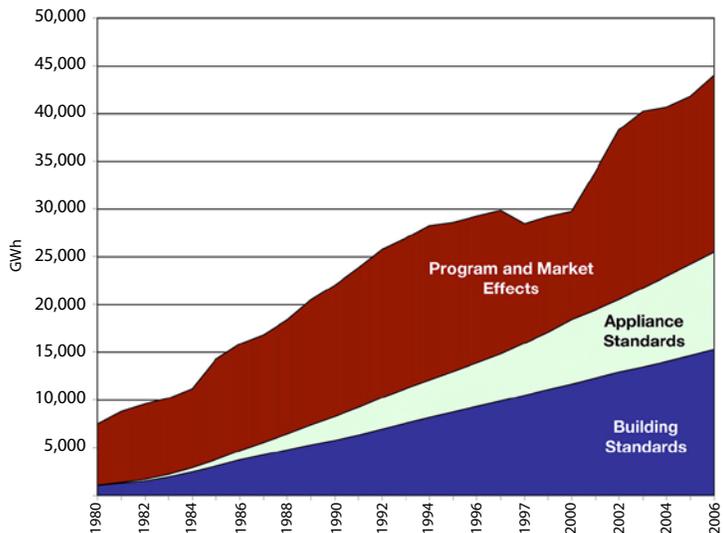
transmission lines. The industry's structure is varied and complex. Entities delivering power to end-users include investor and publicly owned utilities, utility districts, rural cooperatives, irrigation or water districts, competitive retail electric service providers, and one state and one federal water agency. The three large investor-owned utilities, Pacific Gas and Electric, Southern California Edison and San Diego Gas and Electric, and the publicly owned Los Angeles Department of Water and Power and Sacramento Municipal Utility District deliver about 80 percent of the state's electricity supplies (Figure 2). The traditional investor-owned and publicly owned utilities, federal entities and independent power companies own California's almost 1,000 operating power plants.

California's utilities produce in state over 78 percent of the electricity that consumers use and import the remaining 22 percent from the Pacific Northwest (7 percent) and the Southwest (15 percent). While imported electricity from the Northwest and Southwest is a relatively small share of California's electricity mix, these sources contribute a disproportionately large share of the electricity sector's GHG emissions (see Figure 1). In recent years, their contribution has varied from 39 to 57 percent of the GHG emissions associated with electricity consumption in California. This is because a significant portion of electricity imported into the state comes from coal-based generation in the Southwest. Electricity imports from the Pacific Northwest are primarily hydro-electricity. AB 32's cap encompasses emissions from imported electricity.

The Public Utilities Commission and Energy Commission's *Proposed Final Opinion* and the adopted March 2008 *Interim Opinion* conclude that the most prudent avenue for addressing California's climate issues is to pursue both regulatory and market approaches to achieve significant GHG reductions. Initial reductions will be achieved by an aggressive ramp-up of regulatory programs. The GHG emission strategies developed in this proceeding are consistent with the ARB *Climate Change Draft Scoping Plan* (June 2008) and include 33 percent renewables-based generation, aggressive energy efficiency programs, and a multi-sector regional cap-and-trade program. The Commissions agree that the foundation for success to reduce GHG emissions in the electricity sector is more energy efficiency and further development of renewable energy sources such as wind, solar, geothermal and biomass. Energy efficiency is the least expensive, most preferred strategy to achieve AB 32 goals as outlined in the *2008 Energy Action Plan Update*. The state's efficiency standards and the utilities' programs have made a significant difference in California's energy consumption (Figure 3).

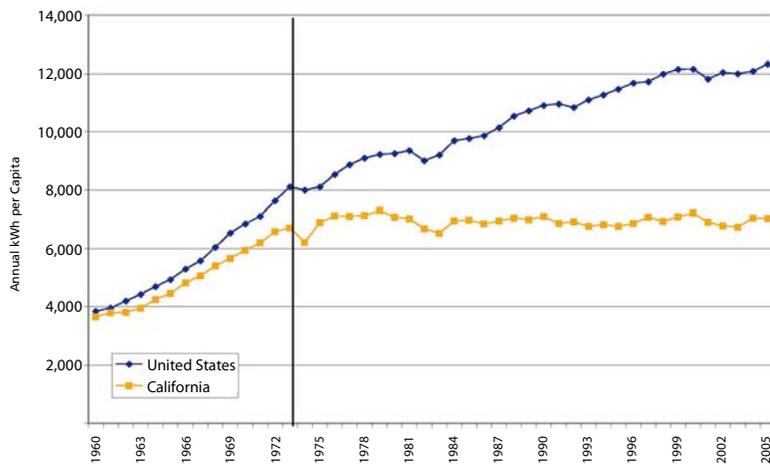
California's per capita electricity use has remained almost flat over the last 30 years, demonstrating the success of a variety of cost-cutting programs and cost-effective building and appliance efficiency standards (Figure 4). The Energy Commission and the California Public Utilities Commission are persuaded that all cost-effective energy efficiency can be achieved in California with more aggressive building and appliance standards, expanded utility programs and new strategies and technologies.

Figure 3
CUMULATIVE EFFICIENCY SAVINGS 1980 - 2006



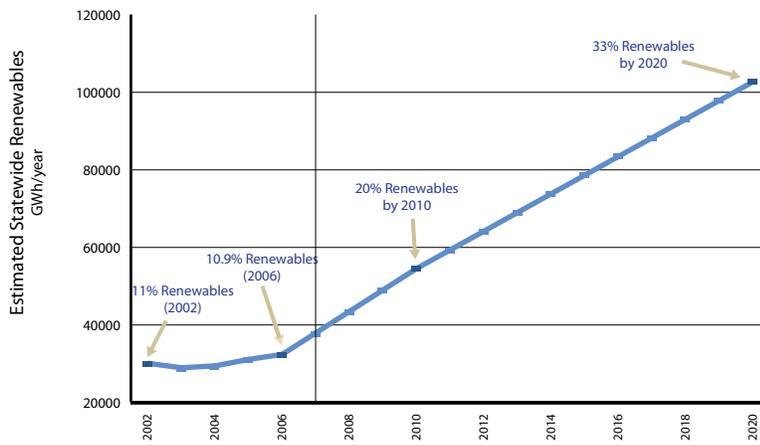
SOURCE: 2008 ENERGY ACTION PLAN UPDATE

Figure 4
CALIFORNIA HOLDS THE LINE ON ELECTRICITY CONSUMPTION



SOURCE: 2007 INTEGRATED ENERGY POLICY REPORT

Figure 5
PROGRESS TOWARD CALIFORNIA'S RENEWABLE ENERGY GOALS



SOURCE: 2007 INTEGRATED ENERGY POLICY REPORT

Renewable resources are essential for reducing GHG emissions and reaching AB 32 goals, and are a crucial aspect of the future low-carbon economy that is required to meet California's more ambitious, long-term 2050 climate goals of 80 percent below 1990 levels. Over the last three decades, the state has built one of the largest and most diverse renewable portfolios in the world. Currently, about 11 percent of the state's electricity is from renewable energy sources such as solar, wind, geothermal and biomass. The *Proposed Final Opinion* concludes that the target of 33 percent renewables by 2020 is achievable if the state commits to significant investments in transmission infrastructure and key program augmentation. (Figure 5).

These important programs will provide early and stable GHG emission reductions, put California on a pathway toward achieving its near-term 2020 climate target and long range 2050 goals, and serve as a solid foundation for any adopted market mechanisms.

The March 2008 Interim Opinion Recommendations

In March 2008, the two Commissions delivered the *Interim Opinion on Basic Greenhouse Gas Regulatory Framework for Electricity and Natural Gas Sectors (Interim Opinion)* providing their initial recommendations to the ARB.³ In addition to aggressive regulatory measures that maximize energy efficiency and expand renewable energy development, the March 2008 *Interim Opinion* recommended that the ARB consider a complementary market-based approach (a cap-and-trade program) to capture additional cost-effective reductions of GHG emissions. The adoption of a cap-and-trade system would be dependent on the ARB finding that the program would meet certain conditions as specified in Part 5 of AB 32.⁴ The *Interim Opinion* also recommended that in the electricity sector, the “deliverers” of electricity to the California grid (the in-state power plant operators and entities that import power into California) would be responsible for complying with AB 32 regulations.

Under a cap-and-trade program, these deliverers would acquire annual permits (allowances) to emit a certain amount of CO₂ and other GHG emissions based on specified criteria. The *Interim Opinion* recommended that some portion of the GHG emission allowances available to the electricity sector be auctioned off. Electricity deliverers would have three options: 1) emit the amount of GHG emissions allowed by their permit or allowances, 2) reduce their own GHG emissions and sell excess allowances to other emitters, or 3) emit more GHG emissions by purchasing unused permits or allowances from another emitter.

3 The *Interim Opinion* was adopted on March 12, 2008 by the Energy Commission and March 13, 2008 by the California Public Utilities Commission.

4 Part 5 of AB 32 directs that any market program must

- 1) consider the potential for direct, indirect and cumulative emission impacts from these mechanisms, including localized impacts in communities that are already adversely impacted by air pollution,
- 2) prevent any increase in the emissions of toxic air contaminants or criteria air pollutants and
- 3) maximize additional environmental and economic benefits for California.



The *Interim Opinion* concluded that a well-designed cap-and-trade approach would have these attributes:

- **Environmental integrity:** The emissions cap ensures the targeted level of greenhouse gases will be achieved with real reductions.
- **Flexibility:** Trading allows emitters to purchase additional emission rights, if they are needed, and allows more entities to benefit from developing reduction approaches.
- **Incentive to reduce:** Emitters may profit from aggressively reducing emissions by selling their excess allowances.
- **Innovation:** The program encourages creative approaches to achieving reductions at lower costs.

The intent is that the cap-and-trade approach reduces emissions at the lowest social cost by providing regulated entities with the flexibility to procure the least-cost emission reductions available. Such programs, however, must be carefully designed and include built-in safeguards, long-term monitoring, and strict enforcement to ensure that they achieve real, verifiable, and permanent reductions of GHG emissions.

The September 2008 Proposed Final Opinion Recommendations

This *Proposed Final Opinion on Greenhouse Gas Policies (Proposed Final Opinion)*, sponsored by President Peevey from the Public Utilities Commission and the Energy Commission's AB 32 Committee (Chairman Pfannenstiel and Commissioner Byron), builds on the March 2008 Interim Opinion and provides further recommendations, outlining a variety of options for the ARB to consider in deciding how to design a program to achieve the GHG emission targets in the electricity sector.



Energy Efficiency and Renewable Resources in the Electricity Sector

California's electricity industry is likely to play a major role in meeting the state's greenhouse gas reduction goals for 2020 and beyond. In fact, the electric power industry accounts for about one-fourth of California's greenhouse gas emissions and is being asked, in the ARB's *Climate Change Draft Scoping Plan*, to contribute about 40 percent of the total greenhouse gas reductions that come from direct reduction measures. In addition, depending on the allowance allocation policy among sectors in a cap-and-trade program if one is adopted by the ARB, the electricity sector could be asked to contribute up to 55 percent of the overall reductions required.

To achieve these ambitious cuts in GHG emissions, the *Proposed Final Opinion* reaffirms a commitment to energy efficiency, and recommends an aggressive expansion of efficiency standards and programs to pursue all cost-

effective energy efficiency options in the state. Energy efficiency is the cheapest and most effective strategy for reducing greenhouse gas emissions in both the electricity and natural gas sectors. The *Proposed Final Opinion* recommends that the ARB require comparable investments in energy efficiency from investor-owned and publicly owned utilities.

The *Proposed Final Opinion* also recommends that all retail providers be required to deliver 33 percent renewable electricity to their customers by 2020. The Commissions believe that this goal is achievable with a serious commitment to overcoming challenges such as transmission access and system integration.

Distributing Greenhouse Gas Emission Allowances in a Cap-and Trade Program

A number of approaches to the distribution of emission allowances were proposed in extensive comments filed by the parties to the proceedings. While those proposals were primarily focused on how to distribute emission allowances within the electricity sector, the Proposed Final Opinion also makes several general recommendations about the distribution of allowances (or allowance value, in the case of allowances that are auctioned) to the electricity sector within a multi-sector cap-and-trade program. Generally, the Proposed Final Opinion recommends that allocation of allowances (or allowance value) to the electricity sector at the beginning of the program in 2012 be based on the proportional historical emissions of the sector during ARB's chosen baseline period. In addition, allocations between 2012 and 2020 should ramp down in a straight line, with the electricity sector continuing to receive its proportional share of the allowances based on its share of emissions relative to other sectors. This will ensure equity among sectors of the California economy in the cap-and-trade program.

In evaluating potential allocation approaches within the electricity sector, each approach was considered against the following criteria: minimizing costs to the consumer; promoting equity among market participants; supporting a well-functioning market with accurate prices, certainty, and predictability; providing simplicity in administering; and aligning incentives with the AB 32 goals. Staff of both Commissions released a joint paper for public comment on April 16, 2008 that analyzed several approaches, including distribution of GHG emission allowances to electricity deliverers based on their historical emissions, allocations based on amount of elec-



tricity delivered, and auctioning of allowances. Other approaches that have been considered include distributing allowances on the basis of economic harm or a specified right to purchase emission allowances at a set price.

After considering the parties' arguments and the results of the analyses, the *Proposed Final Opinion* determines that auctioning is the preferred method to distribute emission allowances. However, setting up a 100 percent auction from the beginning is a monumental and costly chal-

lenge. To provide time for the electricity sector to adjust to a multi-sector, regional auction system, the *Proposed Final Opinion* recommends that some emission allowances be allocated for free in the early years, with the portion of allowances auctioned increasing over a five-year period to 100 percent.

The *Proposed Final Opinion* offers a reasonable balance of the policy options and provides these recommendations as guidance to the ARB on distributing emission allowances:

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- Starting in 2012, 80 percent of the emission permits or allowances would be distributed for free to the electricity deliverers and 20 percent would be auctioned. Over five years, the percentage auctioned would increase by 20 percent per year, so by 2016, 100 percent would be auctioned.
 - The free, administratively allocated emission allowances would be distributed to the deliverers based on their energy output and limited to the emitting entities. The number of allowances would be weighted based on the fuel source (such as coal and natural gas) of electricity delivered. If emitters can reduce the carbon content of their power, the allowances they save can be sold to other entities in the private market.
 - All or almost all of the allowances to be auctioned would be granted to the electricity retail providers, on behalf of their consumers. These retail providers would be required to sell the allowances in an independent, centralized auction and would receive the revenues from the auction. This process would ensure open access to these allowances by the deliverers who require them.
 - The portion of the allowances to be granted to retail providers for successive auctions would change over time, from allocation on the basis of historical emissions in the retail provider's portfolio to, by 2020, allocation on the basis of electricity sales.
 - All auction revenues would be used for purposes related to AB 32, and all revenue from allowances allocated to the electricity sector and received by retail providers would be used for the benefit of the electricity sector to support investments in renewables, efficiency, new energy technology, infrastructure, customer bill relief, and other similar programs.
 - The California Public Utilities Commission (for the investor-owned utilities) and the governing boards (for publicly owned utilities) would determine the specific use of retail providers' auction revenues consistent with the purposes of AB 32.
 - The ARB may decide to retain a small portion of total emission allowances from the electricity sector, and use the resulting auction revenues to fund statewide energy programs consistent with AB 32.



Treatment of Combined Heat and Power

Combined heat and power (CHP) projects (a process that captures and uses excess heat generation during the production of electricity) offer an attractive greenhouse gas reduction option. This cogeneration of heat and power achieves greater efficiency when compared to generating heat and power separately and can, depending on the size and age of the system, emit fewer GHG emissions. Since CHP projects result in heat and electricity output, the Commissions considered a number of options on how to address CHP as a strategy for reducing greenhouse gases.

The *Proposed Final Opinion* recommends that for CHP projects larger than ARB's minimum size threshold for AB 32 compliance, the GHG emissions for electricity consumed on-site and electricity delivered to the electricity grid be included in a multi-sector cap-and-trade program, consistent with other electricity sources and providers. The *Proposed Final Opinion* recognizes the value of higher energy efficiency provided by CHP projects. Building more CHP, however, will require additional study to identify the type and size of CHP projects that should receive additional encouragement. Furthermore, the *Proposed Final Opinion* recommends that the Commissions work together in the future to develop rules, programs and policies to achieve higher CHP goals.



Market Design and Flexible Compliance

Since the March 2008 *Interim Opinion*, the Commissions have reviewed electricity-sector-specific market design and flexible compliance options that the ARB could consider if it implements a cap-and-trade program. Maintaining environmental integrity for achieving AB 32 greenhouse gas emission goals is the primary driver for market design. The market design should also allow for open and transparent allowance trading with many participants.

A number of electricity sector characteristics, including unpredictability of emissions year-to-year due to variable weather and water conditions, make flexible compliance particularly important for this sector. Flexible compliance options can also reduce costs by allowing entities to pursue alternative means of meeting GHG emission requirements. Parties commented on a broad range of issues such as price triggers and other safety valves, linkage, compliance periods, banking and borrowing of greenhouse gas emissions allowances, penalties and offsets.

The *Proposed Final Opinion* concludes that flexible compliance mechanisms should be designed to reflect the market and the emission reductions required of the yet-to-be-determined market participants. The California Independent System Operator, for example, is developing recommendations for a new electricity market redesign to improve reliability that should assist with this effort. More detailed rules and regulations for most flexible compliance options will be required after the market details become known. Any market design elements must maximize liquidity and transparency in the greenhouse gas emission allowance market while maintaining the integrity of allowances and the emission cap.

To achieve these goals, the *Proposed Final Opinion* agrees with direction taken by the ARB in their draft *Scoping Plan* and supports bilateral linkage of a California cap-and-trade program, if one is developed, with other states in the Western Climate Initiative to create a multi-sector, regional cap-and-trade market. A regional market is recommended to broaden opportunities to find real, cost-effective emission reductions, to smooth the effects of localized weather and hydrologic variations, and to avoid leakage and other potential drawbacks of a California-only system.

The *Proposed Final Opinion* also encourages ARB to allow unlimited participation in the cap-and-trade system, with adequate safeguards to prevent market manipulation and anti-competitive behavior. To ensure environmental integrity of the system, no safety valves or price triggers – such as increasing allowance prices automatically when a set price is reached – should be offered.

For now, to increase flexibility and reduce compliance costs, the *Proposed Final Opinion* recommends that, should a multi-sector, regional cap-and-trade market develop, a three-year compliance period be established to allow emitting entities time to implement emission reduction measures. Unlimited banking of GHG emissions allowances and offsets should be allowed. Emission offsets must be real, additional, verifiable, enforceable, and permanent, and should not be geographically limited. The *Proposed Final Opinion* recognizes that further work is required in this area and proposes that the Commissions work with the ARB to evaluate the usefulness of other market design and flexible compliance features.



Next Steps for the *Final Opinion* Process

Over the next several weeks, the *Proposed Final Opinion* is available for public comment before being finalized and adopted by the Commissions. The Energy Commission and the California Public Utilities Commission plan to individually adopt the finalized *Final Opinion* at their October 16, 2008 public meetings. The *Final Opinion* will then be submitted to the ARB for consideration in their scoping plan process.





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