State Of California **The Resources Agency of California**

Memorandum

To: JOHN L. GEESMAN
Presiding Member
Integrated Energy Policy
Report Committee

JAMES D. BOYD
Associate Member
Integrated Energy Policy
Report Committee

Date: September 22, 2005

From: **California Energy Commission**
1516 Ninth Street
Sacramento, CA 95814-5512

JOSEPH DESMOND
Chairman

Subject: **IEPR Greenhouse Gas Performance Standard**

California seeks to capture the potential benefits from conventional fuels in a manner that is consistent with other electricity, petroleum and environmental policies to support consumer needs for affordability, security and reliability. Among these are state laws related to reliability, air emissions, climate change, and renewable energy development, as well as policies contained in Governor Schwarzenegger's executive orders and his energy policy directions specified in his response to previous *Integrated Energy Policy Reports* (IEPR). The latter specifically directs that this 2005 IEPR contain a policy addressing clean coal. The California Energy Commission has developed a record in the 2005 IEPR proceeding which allows us to begin to rise to this gubernatorial challenge. Last week, you advanced the following greenhouse gas (GHG) performance standard in the Committee draft IEPR:[1]–

> ***…any GHG performance standard for utility procurement [should] be set no lower than levels achieved by a new combined-cycle natural gas turbine.***

This proposal, intending to set achievable limits on new GHG emissions by referencing a standard based on net emissions per megawatt-hour, provides the foundation for a responsible clean coal policy. The exceedingly complex dynamics of technology, fuel prices, climate and multiple energy production/end use sectors necessitate additional detail and discussion. I am providing additional underlying information below which notes California's unique energy policy leadership opportunity and needs, briefly

[1] Committee Draft IEPR, September 15, 2005, page 71.

synthesizes existing state policies related to coal and offers supplemental language and policy discussion for consideration in the Energy Commission's final IEPR.

The IEPR Committee will be holding a series of hearings to facilitate public comment on the major topics included in the IEPR. On October 6 the hearings will focus on the loading order, renewables and other electricity resource issues, and on October 7 the electricity portion of the IEPR. I urge you to invite comments at these hearings on the policy initiatives below.

Energy Policy Leadership

The impacts and aftermath of the hurricane season now devastating the U. S. Gulf Coast bring new urgency to critical energy issues facing California. The reduced production of natural gas from the Gulf Coast stemming from this natural disaster highlights the risks associated with the state's growing dependence on gas and exposure to price volatility. The continued high price of natural gas will impact our energy bills, not only for heating our buildings and powering industry, but also for producing electricity. These price pressures affect lower-income California families disproportionately. To help families struggling to meet higher energy costs and to protect all consumers against these and other such risks, we must increase the diversity of our energy fuels.

Since 1999, 9,808 Megawatts of new gas-fired generation have been added in California. Today, we generate 45 percent of our electricity from natural gas-fired generating plants. From the western U.S. perspective, concerns regarding high price and domestic natural gas reserves have profoundly changed the landscape for electric system operation and expansion. One outcome of this is that over 30 new coal power plants are now in the planning and permitting stages. A significant share of this development is targeted to meet expected demand from coastal states.

California has the opportunity and the obligation to provide leadership on fuel diversity by clearly defining and communicating its expectations. Our policies should explicitly take into account impacts on both California consumers and our neighboring states. It is particularly critical that California, as the largest western electricity market, clearly identify how it intends to meet its future needs so that all western market participants and regulators can make informed decisions regarding future generation technologies/fuels and transmission additions. Such clearly articulated policies can provide unambiguous signals to load serving entities, generation and transmission developers, the financial community, other western states and public interest advocates. It is equally important to recognize that Californians must be expected to pay the costs associated with these policies.

California is committed to pursuing a loading order for new resources which reserves the highest priority for cost-effective energy efficiency and demand response. Next are renewable sources of power and distributed generation. If these resources are

insufficient to meet increasing energy needs, investment in clean and efficient fossil-fired generation is warranted.

The Governor has set a goal that 20 percent of the state's energy mix will be generated from renewable energy sources by 2010. There is a critical need to ensure that renewable generation can be delivered to load centers. Many of these resources, such as wind and geothermal, are located far from major load centers and will require transmission infrastructure investments to ensure their energy delivery. Simultaneously, the electricity transmission infrastructure must be improved to support growing demand centers and the interconnection of new generation.

Within the loading order policy, California seeks to diversify its electricity generation portfolio and to find potentially lower cost supply options. Clean coal technologies could provide substantial benefits to both California and the rest of the western region because western states' coal resources are secure and offer long-term supply availability. Transmission additions between California and the western states could not only provide these benefits, but also strengthen the reliability of the western region; protect against energy shortages and price spikes; and, combined with strong commitments to clean coal and renewable resources, reduce the cost of controlling emissions from the vast western fossil fuel resource base. With its leadership position in seeking and encouraging advanced technologies, limiting greenhouse gas production and improving its energy infrastructure, California is presented with an opportunity to influence and encourage the use of clean coal technologies it believes are most suited to its needs and values.

Existing California Policies Affecting Clean Coal

Policies already in place in California provide a foundation for a clear and innovative clean coal policy. Consistent and unambiguous communication of these policies regarding low carbon advanced fuels is important for generation developers, power purchasers, coal production states and states through which transmission would connect to California. Six existing policy areas are described in the following subsections.

1. Comprehensive Accounting, Reporting and Inventory Procedures. California has in place a widely respected registry for greenhouse gas emissions (California Climate Action Registry — CCAR) and a tracking and reporting process for generation sold in the state. Additionally, the Energy Commission is responsible for periodically preparing a comprehensive inventory of GHG emissions. A foundational element of a clean coal policy is to ensure that accounting, inventorying and reporting functions successfully and explicitly include all emissions, whether or not located within California. Tracking and reporting through the state electricity system labeling process should be reviewed to ensure all generation is included and transparently identified. Linkages between the Climate Action Registry and power content labeling should be explored to identify options, including possible statutory changes needed to estimate/report emissions from all generation sold in California.

2. Emission Valuation in Generation Procurement. In accordance with the California Public Utility Commission's (CPUC) procurement decision, a value of $8/ ton of CO2 is applied in the evaluation of future long term utility resource procurement plans. California's clean coal policy should support continued valuation and refine key aspects of the provisions, including consistent application to all utilities, re-examining the value assigned for tons of CO2, if appropriate, and the timeframe in which the mechanism is applied. This review should be conducted in concert with the cap and trade approach being considered by the Governor's Climate Action Team and the emissions cap on load serving entities as discussed in the CPUC's Procurement Incentive Framework.

3. Greenhouse Gas Emission Reduction Targets. Governor Schwarzenegger has taken historic action for both California and the U.S. by establishing greenhouse gas emission reduction targets for the state, as you note in Chapter 9 of the draft IEPR. The evolution in the use of coal and other potential gasified fuels will have a significant impact on either additions to or reductions in emissions for which California is responsible. In implementing the targets, all current emissions, regardless of footprint, will be included in the inventory baseline from which state and individual reduction targets sectors are developed. Additionally, any future increases related to any fuels combusted for purposes of sale to California consumers will be accounted for explicitly in assessing progress toward the reduction targets. The Energy Commission is providing support to the Climate Action Team as they examine mechanisms and prepare a plan to achieve the targets.

4. Collaboration with Western States and Stakeholders The Governor's energy policy has from the outset affirmed the priority he places on close collaboration with the larger west, particularly in matters related to electricity resource adequacy, deliverability and transmission expansion. Because the three coastal states of California, Oregon and Washington are large population centers that could benefit from transmission improvements and generation additions, it is important that we develop clear statements of intent regarding preferred fuels and technologies for future electric system needs. Although California is communicating its existing loading order policy to the west, it needs to develop and refine its greenhouse gas emissions policies (both existing and new policy initiatives below) and make a concerted effort to communicate it. The extent to which California clearly articulates its procurement policies will be an important factor in determining what types of technologies are constructed throughout the west. This is an essential element in maximizing the opportunity to shape near and intermediate term technology commercialization and resource development in the west.

In addition, the state supports the Western Governors' Association's (WGA) Clean and Diversified Energy Advisory Committee (CDEAC), which is examining the feasibility of and actions that would be needed to develop clean energy in the West, ensure adequate transmission and increase energy efficiency. The western states are working together to grapple with the issues of advanced natural gas, biomass, energy efficiency, geothermal, solar, wind, transmission, and clean coal. The CDEAC task forces will be identifying a series of state and federal level policy recommendations , including specific

consideration of clean coal. California's clean coal policy should be refined in light of the results of that collaborative process.

5. PIER Research and Demonstration

In addition to the carbon sequestration activities described in the draft IEPR, such as projects by the Energy Commission, the California universities and others are pursuing an array of emission and climate change research projects. The results of these efforts to investigate and verify – among other considerations – sites, technologies and costs will continue to provide a basis for refinement of existing and potential future GHG emissions reduction and clean coal-related policies.

6. Federal Policies

On August 8th, the 2005 federal energy policy act was signed into law. The legislation includes a number of substantive incentives for clean coal. These include:

- Title XVII Incentives for Innovative Technologies - Loan Guarantees
  - Establishes a loan guarantee program to provide up to 80 percent federal loan guarantees to gasification and other eligible technologies.
  - Requires eligible IGCC projects to meet certain emissions performance criteria, have an assured revenue stream to cover project capital and operating costs that is approved by the Secretary of Energy and relevant state PUCs, and be designed to of accommodate carbon capture equipment.
  - Provides an option for the project owner to pay for the federal cost of scoring their loan guarantee, which will enable the program to provide guarantees even in the absence of appropriations. Establishes no cap on the amount of loan guarantees.

- Title XII Tax Credits - Investment Tax Credit
  - Creates investment tax credits (ITC) for IGCC, industrial gasification, and advanced combustion facilities.
  - IGCC projects may receive a 20 percent ITC and the program may provide up to $800 million of credits.
  - Industrial gasification projects may receive a 20 percent ITC and the program may provide up to $350 million of credits.
  - Other advanced coal-based projects may receive a 15 percent ITC and the program may provide up to $500 million of credits.
  - All projects must be certified by the Secretary of Treasury in consultation with the Secretary of Energy.

- Title XXXI Clean Air Coal Program

  - Authorizes $2.5 billion for a grant program to assist commercial deployment of advanced coal technologies, including gasification, through loans, cost sharing, or cooperative agreements.

- Title IV Subtitle A Clean Coal Power Initiative
  - Authorizes $200 million per year from 2006 to 2014 for a federal government cost share grant program to demonstrate commercial-scale applications of advanced clean coal technologies, including gasification-based technologies.

New Policy Initiatives

Procurement and Demonstration

The Governor is committed to reducing California's greenhouse gas emissions while expanding its access to affordable and reliable electricity services. The Governor's top priorities for resource development, as indicated in his response to the Energy Commission's Energy Policy Reports, are energy efficiency and renewable energy resources. When California utilities and other retail electricity providers are considering new long-term investments in fossil-fueled generation, concerns properly arise regarding future costs and risks associated with greenhouse gas and other emissions from such facilities. The following policies could provide a balance of long run goals and near term progress.

1. Specify Greenhouse Gas Performance. Recognizing costs, risks and the state's overall greenhouse gas reduction and energy resource commitments, limits on greenhouse gas emissions can be achieved through performance goals and targets. Because California should not burden interstate commerce or discriminate against particular technologies or fuels, it should specify a greenhouse gas performance standard which it applies to all energy resources, both in-state and out-of-state, both coal and non-coal:

i. If and when a system of mandatory limits on greenhouse gas emissions consistent with the state's GHG emission reduction targets becomes effective in California, through any combination of state, regional and federal action, decisions on new long-term commitments to fossil-fueled generation to meet the state's needs should be made in compliance with that system, including any associated rules for trading emissions to minimize the costs of reductions. California is now exploring such options through the Governor's Climate Action Team.

ii. Prior to the adoption of such limits, California should act to minimize potentially significant reliability and cost risks by avoiding more long-term investments (exceeding 3-5 years in duration) in baseload power plants with emissions per megawatt-hour of greenhouse gases and criteria air pollutants exceeding those of a combined cycle natural gas turbine.

I would appreciate your soliciting public comments, in your IEPR Committee hearings, regarding both the merits of the particular policies proposed above and on whether power plant sponsors should be permitted to use emissions offsets procured from other sources to meet the environmental performance standard suggested by the clean coal discussion in the Committee draft IEPR and described in more detail above, and if so, what standards and verification systems should be established to govern offsets used for compliance purposes.

2. Pursue Commercial Scale Western Clean Fuels Facilities. A second new initiative would be to provide technical support for development of applications for clean coal projects that can successfully compete for federal funding and incentives. California's specific interest is in high efficiency commercial scale facilities with western system applicability.

Other possibilities in the near term include completion of the review of associating the continued operation of the Mohave Generating Station with commercial scale integrated gasification technology. Existing generation and transmission infrastructure could make it feasible for this project to more quickly and cost-effectively integrate into the California resource portfolio. A second western region priority is to assist private developers to apply for federal funds supporting a commercial scale facility using Powder River Basin coal for local and export markets. One possibility for expediting this approach would be to provide political and technical support for developers of currently proposed pulverized coal projects who are willing to apply state of the art advanced technology or preferably convert entirely to an IGCC plant, supported by Department of Energy (DOE) funding. A third commercialization path could seek the interest, capital and expertise of the oil and chemical industries in California to explore options that can use coal and coke fuels for IGCC or other technology at commercial scales and locations compatible with state air emissions regulations. The latter approach should also be coupled with use of captured carbon for enhanced oil recovery purposes. California's chemical industries and others interested in transportation fuel substitutes such as Fischer Tropsch diesel may be encouraged to join as partners in defining co-benefits of technology commercialization projects.

While specific project proposals will need much detailed development, it is urgent that the state provide leadership, coordination and PIER research and technical support to speed technology commercialization and ensure project applications with the lowest emissions profiles and with the most economically feasible means of capturing and disposing of carbon are prepared expeditiously and submitted to DOE before other regions win funding for proposals less suitable for western applications.

3. Investigate Energy Production Synergies. The Committee draft IEPR reports on important new work related to intermittency, renewable energy strategic benefits, and the possible value of integrating wind, hydro and existing resources. Consistent with the state's loading order, the linking of remote wind generation and rapid ramping generation facilities fueled by coal gasification products may bolster the economics of long-distance transmission investments. The record also highlights several intriguing

potential synergies between clean coal generation and other energy production. For example, as noted above, production of extremely clean liquid transportation fuels from coal and petroleum coke may be a longer term option to seek reduced dependence on imported petroleum in the transportation sector.

I look forward to hearing from all interested parties and to working with you to help craft a responsible clean coal policy for the final IEPR.

Sincerely,

JOSEPH DESMOND
Chairman