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**Remarks by Commissioner James D. Boyd
Vice Chair, California Energy Commission
Distributed Energy Resources: A State Policy Perspective
January 31, 2008, CADER Conference in La Jolla**

I am pleased to be asked to share my perspective as a member of the California Energy Commission on the important issues facing distributed energy resources. As the economist member of the California Energy Commission, I am closely attuned to the potential economic, energy efficiency and electricity systems benefits of increased use of distributed energy resources in California.

As most of you know, the Energy Commission has encouraged development of distributed energy resources, including distributed generation (DG), renewable energy, and combined heat and power (CHP) projects, since the late 1990s. We continue to strive to address the barriers to distributed generation (DG) through collaborative efforts with the California Public Utilities Commission (CPUC). Yet, significant issues facing DG developers persist.

As a policy matter, the Energy Commission jointly adopted a preferred loading order with CPUC. This joint policy statement calls for utilities to meet their electricity needs first through cost-effective energy efficiency investments; second from renewable energy and distributed generation sources; and finally, from all other energy sources. We have long recognized that both CHP and distributed generation are key elements in the preferred loading order.

The benefits of distributed energy resources are numerous. DER includes distributed generation (DG), which uses renewable, advanced fossil fuel and combined heat and power (CHP) technologies. DER offers the benefits of energy security, sustainability, and the promise of clean, affordable and reliable energy supplies.

Regardless of size or interconnection voltage, DER (in its many forms) remains a valuable resource option for California. Combined heat and power, in particular, offers low levels of greenhouse gas emission for electricity generation, taking advantage of fuel that is already being used

for other purposes.

Similarly, DG can play an important role in helping to meet local capacity requirements. The California ISO has encouraged the CPUC to include local capacity requirements in its procurement process to replace power plants that must operate, even if uneconomically, to preserve system reliability.

In the *2005 Integrated Energy Policy Report (2005 IEPR)*, the Energy Commission reported that, despite many years of policy preferences, both DG and combined heat and power continue to struggle with major barriers to market entry.

First, access to the wholesale power market continues to be a major consideration in encouraging DG. In our *2005 IEPR*, the Energy Commission reiterated that California must improve access to wholesale energy markets and streamline utility long-term contracting processes. Removing these market barriers is needed so that combined heat and power facility owners can efficiently sell excess electricity to their local utility.

Secondly, California electric distribution systems need to be better integrated with distributed renewable energy, combined heat and power and demand response. About 90 percent of all customer interruptions and outages in California today are caused by distribution problems.

Existing electric distribution systems continue to use system designs, technologies and strategies which were intended to meet the needs of mid-20th century customers. These large and complex systems have historically provided reliable electric power to millions of customers throughout the state; however, aging distribution infrastructure coupled with modern demands is starting to erode this capability.

Ideally, an automated 21st century distribution grid incorporating distributed renewable energy, combined heat and power and demand response would allow operators to manage the grid in real time, provide for rapid two-way information exchange between utilities and customers, and provide a seamless integration of the full spectrum of 21st century technologies.

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Thirdly, DG should be integrated with local distribution planning and utility resource procurement processes to support the use of new low-carbon resources and applications. For example, DG should be designed to support renewable power sources, demand response, efficient combined heat and power, distributed generation, energy storage, advanced metering infrastructure, and plug-in hybrid electric vehicles.

To that end, the Energy Commission through its Public Interest Energy Research Program (PIER) is funding RD&D to accelerate the transformation of the distribution grid into an intelligent and sustainable network. Our research program is aimed at supporting technologies that provide efficient, reliable and affordable energy to customers through a low-carbon electricity system.

More recently, in our *2007 IEPR*, we recommend a collaborative approach with the CPUC, with a number of specific recommended actions:

Eliminate the non-bypassable charges for combined heat and power and DG and the punitive standby reservation charges for DG.

Working through the "Rule 21" Working Group, improve interconnection standards, providing third party resolution of interconnection issues and streamlined permitting.

Develop a methodology for estimating DG costs and benefits.

Adopt greenhouse gas reduction measures and regulations that fully reflect the benefits of combined heat and power.

Establish a tariff structure to make DG projects "cost and revenue neutral," while granting owners credit for system benefits, such as reduced congestion.

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Base the CPUC incentives under its Self-Generation Incentive Program on overall efficiency and performance of systems, regardless of fuel type.

The Energy Commission identified CHP as the most cost-effective form of distributed energy generation. The Energy Commission established a realistic goal of adding 5,400 megawatts of CHP by the year 2020. We recommended the adoption of a consistent set of state policies, which would require joint action by the Energy Commission and the CPUC, including:

Establishing annual utility procurement targets for CHP;

Requiring that investor-owned utilities purchase electricity from CHP facilities at prevailing wholesale prices;

Exploring regulatory incentives that reward utilities for promoting customer and utility-owned CHP projects; and

Requiring that investor-owned utilities provide scheduling services for CHP facilities through the California Independent System Operation (ISO) and allowing utilities to receive compensation for such serviced.

Furthermore, in our *2007 Distributed Generation and Cogeneration Policy Roadmap for California*, the Energy Commission recommended a three-part strategy which allows CHP to compete for its share of the energy market:

Support near-term market incentives, such as tax credits, self-generation incentives, low-interest loans, and production tax credits.

Transition to new market mechanisms, which promote development of CHP through utility incentives, net metering, favorable rate structures, interconnection standards, and access to emerging emissions markets.

Reducing regulatory and institutional barriers, in order to promote CHP through a combination of standards and incentives, which allow CHP to more favorably compete with central generation facilities.

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Lastly, the Energy Commission continues to coordinate the efforts of the Bioenergy Working Group, which the Energy Commission chairs. This Working Group, composed of state agencies with important biomass interests, is charged with identifying and removing barriers to sustainable production and use of the state's biomass resources.

In April 2006, the Governor signed Executive Order S-06-06 which set instate production and use targets for bioenergy, and the State of California's Bioenergy Action Plan, which the Governor subsequently released in July 2006, commits state agencies with biomass interests to a series of action steps intended to further state instate production goals. While progress has been made, there is much work still to be done to address outstanding issues preventing full utilization of our state's agricultural, urban and forestry wastes as a source of renewable energy and transportation fuels.

California is in a unique position to use its substantial biomass waste stream for energy production, including the production of biofuels, biogas and biomass power, and to address its energy needs and waste disposal problems concurrently. Using California's waste streams for electricity and fuels production allows our state to satisfy multiple policy objectives concurrently----waste disposal, energy security, environmental quality, climate change and renewable energy development.

Diversifying California's sources of natural gas supply can be accomplished by harnessing biogas from landfill and dairy wastes to produce pipeline-quality natural gas. California utilities are planning to inject biogas (biomethane) from dairies into the natural gas pipeline system and wheeling this gas to existing power plants as a source of renewable energy.

Harnessing biogas from landfills is also an important climate change strategy, since it captures methane, a powerful greenhouse gas, for use as a form of natural gas fuel. Also, greater use of combined heat and power (CHP) fueled by biomass can improve efficiency and enhance the supply of natural gas as a fuel for electricity. For these reasons, the

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Energy Commission recommended in its *2007 IEPR* that:

The Energy Commission and the California Public Utilities Commission should work together to establish an appropriate price per therm to be paid for pipeline-quality biogas that can be injected into California's natural gas pipeline system.

The Energy Commission and CPUC should collaborate to remove institutional and regulatory barriers and to develop appropriate incentives to allow greater use of electrical power and CHP facilities, especially those using biomass as a fuel.

The Energy Commission, Department of Food and Agriculture, State Water Board and other Cal EPA departments should continue to address and seek to resolve the regulatory and permitting issues which are hampering biogas production from dairy digesters.

In summary, DG offers important energy security and system reliability benefits, while CHP offers efficiency and greenhouse gas reduction benefits by producing two forms of energy—electricity and useful heat—from a single fuel source. DG and CHP will remain valuable resource options for California if the current market and regulatory barriers can be overcome. Using California's waste streams for energy and fuels production can address multiple policy objectives concurrently.

Success moving forward will require a concentrated and concerted effort on the part of both the Energy Commission and the CPUC.