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Testimony

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The Role of State and Local Government and the Private Sector

In the Development of Renewable and Alternative Energy in America

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Introduction:

Good Morning Mr. Chairman, Ladies and Gentlemen and distinguished guests. My name is Dan Schochet and I am Vice President for market development for ORMAT Nevada, Inc. By way of introduction ORMAT Nevada is a subsidiary of ORMAT technologies, which is a New York Stock Exchange registered company (symbol "ORA"). We have been headquartered in the Reno/Sparks Nevada area since 1984. We are a technology based company and primarily a developer, owner and operator of geothermal and recovered energy facilities as well a manufacturer and supplier of geothermal and alternative energy power plants to third parties.

ORMAT has supplied, and in many cases installed, some 800 MW of geothermal and alternative energy power plants in 21 countries world wide. We own and operate seven geothermal (7) geothermal power plant complexes totaling 251 MW in the US and an additional four (4) such complexes in four other countries totaling an additional 113 MW. We currently are constructing an additional 98 MW of geothermal and recovered energy power projects in the US and 60 MW overseas. In addition we have contracts to supply two (2) ten (10) MW geothermal power plants to two other operating geothermal companies in the US. To date ORMAT has arranged or participated in over US\$ 1.5 Billion in geothermal project or corporate financing.

The thrust of my testimony today, in line with the purpose of this hearing, is to describe the successful development activities of my company, as a member of the private sector, and the policies of the State and Local Governments which have enabled and fostered the development of such renewable energy projects.

Background:

In the decade of the 1990s with the trend toward electricity deregulation, the low price of natural gas and the improvements in the technology of gas fired power generation, the market for new geothermal power in the US was nearly non existent. As natural gas prices rose, with the concomitant rise in wholesale and retail electricity prices, in the next decade, interest was renewed in geothermal and wind energy. In particular some 16 states (including Nevada and California) enacted laws,

which mandated that investor owned utilities include a percentage of renewable energy in their portfolio of electrical energy generating resources.

Recognizing this trend early on, ORMAT in 2001 embarked on a program to acquire existing operating geothermal projects. Between June 2001 and June 2004 ORMAT, through its subsidiaries, acquired seven (7) geothermal project complexes in the US. In all cases the projects each had: (i) a competent operating and maintenance staff in place; (ii) a power sales agreement with a creditworthy utility; (iii) a geothermal resource leasehold which had the capability for additional generation, and (iv) a power plant that could be improved upon by ORMAT's expertise and value added. As a result of our vertical integration, our proprietary technology and our operational and maintenance expertise, we have been successful in increasing the capacity, efficiency and performance of most of our acquired facilities. As I noted earlier we now operate and maintain 364 MW of geothermal generating capacity world wide.

The Role of Government Policy

Since 2001, there has been renewed interest in geothermal energy in the United States as production costs for electricity generated from geothermal resources have become more competitive relative to fossil fuel-based electricity generation, due to the increasing cost of natural gas, and as legislative and regulatory incentives, such as state renewable portfolio standards and tax credits, have become more prevalent.

Electricity generation from geothermal resources in the United States currently constitutes a \$1.5 billion-a-year industry (in terms of revenues) and accounts for 19% of all non-hydropower renewable energy-based electricity generation in the United States. Although electricity generation from geothermal resources is currently concentrated in California, Nevada, Hawaii and Utah, there are opportunities for development in other states such as Alaska, Arizona, Idaho, New Mexico and Oregon due to the availability of identified geothermal resources.

Based on the findings of the Geothermal Task Force of the Western Governor's Association Clean and Diversified Energy Advisory committee (CDEAC), The Western States share a capacity of almost 13,000 megawatts of geothermal energy that can be developed on specific sites within a reasonable timeframe. Of these, 5,600 megawatts are considered by the geothermal industry to be viable for commercial development within the next 10 years, i.e. by about 2015. This is a commercially achievable capacity for new generation and does not include the much larger potential of unknown, undiscovered resources. The 5,600 MW is estimated to be developable at busbar costs in a range of levelized costs of energy (LCOE) of about 5.3 to 7.9 cents per kilowatt-hour (kWh). This assumes commercial project financing conditions and the extension of a production tax credit (PTC) consistent with current federal energy law. Lacking a PTC to catalyze renewable energy development, LCOE values would be 2.3 ¢/kWh higher.

An additional factor fueling recent growth in the renewable energy industry is concern about the environment. Power plants that use fossil fuels generate higher levels of air pollution and their emissions have been linked to acid rain and global warming. In response to an increasing demand for "green" energy, many governmental entities have adopted legislation requiring, and providing incentives for, electric utilities to sell electricity generated from renewable energy sources. In the United States, Arizona, California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Iowa, Maine, Maryland, Massachusetts, Minnesota, Montana, Nevada, New Jersey, New Mexico, New York, Pennsylvania, Rhode Island, Texas, Vermont, Wisconsin and the District of Columbia have all adopted renewable portfolio standards, renewable portfolio goals, or other similar laws requiring or encouraging electric utilities in such states to generate or buy a certain percentage of their electricity from renewable energy sources or recovered heat sources. Fourteen of these twenty two states (including California, Nevada and Hawaii, where we have been the most active in our geothermal energy development and in which all of our U.S. projects are located) define geothermal resources as "renewables". California requires that each investor-owned electric utility company operating within the state increase the amount of renewable generation in its resource mix by 1% per year so that 20% of its retail sales are procured from eligible renewable energy sources by 2017. As a matter of policy, the State Energy Action Plan adopted by the California Energy Commission and the California Public Utilities Commission has accelerated the deadline to 2010. Presently, approximately 11% of the electricity generated in California is derived from renewable resources (not counting hydroelectricity as renewable power). Nevada's renewable portfolio standard requires each Nevada electric utility to obtain 6% of its annual energy requirements from renewable energy sources in 2005, which requirement thereafter increases by 3% every two years until 2015, when 20% of such annual energy requirements must be provided from renewable energy sources or energy efficiency projects. At least three-quarters of the annual total requirements must come only from renewable energy projects. Hawaii's renewable portfolio standard requires each Hawaiian electric utility to obtain 8% of its net electricity sales from renewable energy sources by December 31, 2005, 10% by December 31, 2010 and 20% by December 31, 2020. In addition, in some states an entity generating electricity from renewable resources, such as geothermal energy, is awarded Renewable Energy Credits (which we refer to as RECs) that can be sold for cash. RECs have been sold for a wide range of prices during the past year, but because the markets for these RECs still remain limited, the prices have been volatile, and vary greatly from state to state. On October 14, 2004, we entered into agreements with Sierra Pacific

Power Company, a utility company in the state of Nevada, to sell RECs resulting from electricity we generate for station use at our Desert Peak, Brady, Steamboat Hills and Steamboat 2/3 projects.

The federal government also encourages production of electricity from geothermal resources through certain tax subsidies. We are permitted to claim approximately 10% of the cost of each new geothermal power plant in the United States as an investment tax credit against our federal income taxes. Alternatively, we are permitted to claim a "production tax credit" of 1.9 cents per kWh. The production tax credit may be claimed on the electricity output of new geothermal power plants put into service during a "window period" that runs from October 23, 2004 through December 31, 2007. Credit may be claimed for five years on the output from any new geothermal power plants put into service during the first part of the window period from October 23, 2004 to August 8, 2005. Plants put into service during the remainder of the "window period" qualify for 10 years of tax credits. The owner of the project must choose between the production tax credit and the 10% investment tax credit described above. In either case, under current tax rules, any unused tax credit has a 1-year carry back and a 20-year carry forward. Whether we claim the production tax credit or the investment credit, we are also permitted to depreciate most of the plant for tax purposes over five years on an accelerated basis, meaning that more of the cost can be deducted in the first few years than during the remainder of the depreciation period. If we claim the investment credit, our "tax base" in the plant that we can recover through depreciation must be reduced by half of the tax credit; if we claim production tax credit, there is no reduction in the tax basis for depreciation.

Thus the role of the State Governments, as well as the Federal Government be enacting policies which foster renewable development has been crucial to enabling the private sector activities. Local government activities are more complicated and vary from state to state, as well as often from county to county. Though there are some local financial incentives, such as tax abatements for sales and property taxes, these are generally not the enabling issues. Rather the streamlining of permits may often be the defining roles that states and local governments. Thus the fact that in Washoe County Nevada there is no requirement for a Public Service of Nevada UEPA permit often shortens the overall project schedule. In addition the requirements for certain State permits, which are the result of specific events which have occurred within the state but are not relevant to geothermal or renewable projects, can increase project costs and execution time. An example is the Nevada Department of Environmental Protection Chemical Accident Protection Permit (CAPP) which is the result of several accidents at explosives handling plants, as applied to geothermal projects is really an unnecessary time and cost burden on such projects.

Recommendations for the Future:

Geothermal power can be a major contributor to the power infrastructure and economic well-being of the Western States. New geothermal power capacity of 5,600 MW (see Table 1) could add nearly 10,000 jobs, and also generate about 36,000 person-years of construction and manufacturing business. Geothermal power is a reliable, 24/7 base load energy source that typically operates at 90 to 98 percent of the time. Insulated from conventional fossil fuel market volatility, geothermal power supports energy price stability and boosts energy security because it is a domestic resource. Geothermal power can help fulfill Renewable Portfolio Standards (RPS) that strive to diversify the states' and nation's energy supply. Geothermal energy is a clean electricity source, discharging far less emissions, including greenhouse gases, than equivalent fossil-fueled generation. Table 2 shows the Supply Curve showing the cost of adding this amount of geothermal energy. (Source: CDEAC Geothermal Task Force Draft Report)

In addition the States play a key role in enabling new transmission to be constructed in otherwise remote areas, as needed to bring geothermal and renewable energy to the load centers. Given the relatively small size of most geothermal projects a "super" agency is often called upon to plan and implement such major new projects. An example of this is the Frontier Line, a multibillion-dollar transmission line project connecting California, Wyoming, Nevada and Utah to transmit electricity around the West. The Frontier Line has been hailed as a way to provide cost effective, stable electricity to a region with growing energy needs. Environmentalists and others are concerned however that in addition to enabling more coal-fired power plants, there will be adequate access for transmission of geothermal and other forms of renewable energy to enable the development of the full renewable potential of the Western United States. Again providing the framework for new transmission is a vital role for State Governments.

The full realization of the geothermal energy potential of the Western United States, including increasing geothermal energy in Nevada from its current 200 MW to some 1,500 MW, could be realized by implementing the following recommendations:

I. Market Development -

The marketplace needs to support the continued development of geothermal resources.

- Federal and state tax credits are important to reduce the risk and high capital cost of new projects. The federal production tax

credit (and clean renewable bonding authority) should be made permanent, or at least extended for ten years.

- State laws and regulations should promote a continuing series of opportunities for power purchase agreements between developers and utilities. Whether generated through Renewable Portfolio Standards, Integrated Resource Planning, or other mechanisms, power purchase contracts are fundamental drivers of the market.
- Federal and state laws and regulations should provide incentives for utilities and others to enter into long-term contracts for renewable power. Accounting and regulatory standards should treat renewable power contracts as benefits instead of liabilities, and power purchase contracts should have the backing of the government to ensure their credit worthiness.

II. Timely Permitting and Environmental Reviews -

Geothermal projects should be prioritized to ensure that permitting, leasing, and environmental reviews are completed in a timely and efficient manner.

- Federal, state, and local agencies should coordinate resources and requirements. Agencies should be designated to take the lead on specific issues to avoid duplication, and once issues are resolved they should not be revisited without cause.
- A critical path for new projects should be defined as part of this cooperative effort, and timeframes for key agency decisions along the pathway should be established.

III. Transmission Access and Adequacy -

Adequate transmission should be available for the identified resources.

- There should be consistent western state policies on inter-connection to the grid that facilitate new geothermal (and other renewable) power development.
- A fee to support the cost of new transmission could be set that would spread the cost across all states, parties and technologies on a capacity basis.
- Both inter- and intra- state transmission is needed to support the identified resources should be fast-tracked for permitting and environmental reviews.

III. Federal Program Support -

The States should play a major role to assure continuing support from key federal programs is needed to achieve the 2015 goals. Federal programs should be coordinated with state agencies.

- Given the enormous potential of the resource base, geothermal research by the US Department of Energy should be increased, particularly into technologies that can reduce risk, reduce costs, or expand the accessible resource base.
- Better resource information is needed. The USGS' new resource assessment and DOE's cost-shared drilling and exploration technology efforts should be priorities.
- The US Department of Energy's initiatives should continue to support state and local governments, Indian Tribes, and others seeking to utilize the West's untapped resources.

Mr. Chairman that completes my testimony and I thank you and the Committee for your consideration and for your continued support of geothermal energy.

Table 1

Summary of Western States' Near-Term

	New Geothermal Power Capacity Capacities (in Megawatts)	Number of Sites
Alaska	20	3

Arizona	20	2
Colorado	20	9
California	2,400	25
Hawaii	70	3
Idaho	860	6
Nevada	1,500	63
New Mexico	80	6
Oregon	380	11
Utah	230	5
Washington	50	5
Total	5,630 MW	138

NOTE : Wyoming, Montana, Texas, Kansas, Nebraska, South Dakota, North Dakota were not analyzed by the CDEAC Geothermal Task Force Sub Group on Supply.

Table 2

