

**Geothermal Energy Association (GEA) Comments on the California Air Resources Board (CARB) October 2008 Climate Change Proposed Scoping Plan  
December 10, 2008**

The Geothermal Energy Association (GEA) supports the overarching goal of Assembly Bill 32, the Global Warming Solutions Act of 2006 (Núñez, Chapter 488, Statutes of 2006) to reduce greenhouse gas (GHG) emissions to 1990 levels by 2020. GEA also commends CARB for the preparation of the October 2008 “Climate Change Proposed Scoping Plan” that outlines California’s strategy to achieve the 2020 greenhouse gas emissions limit.

As CARB and other state agencies have directed, the overall goal of AB 32 is to dramatically reduce direct or fugitive (i.e. anthropogenic or “man-made”) sources of greenhouse gas emissions, most of which are from the combustion of fossil fuels or release of greenhouse gases from industrial processes.<sup>1</sup> GEA believes that expanded development of geothermal resources to produce renewable energy can be a significant contributor to achieving such reductions.<sup>2</sup> As the attached abstract notes, current assessments of the incremental geothermal resources in California range up to 24,000 MW and higher.<sup>3</sup>

To encourage development of these resources, we would urge CARB to exempt all renewable generation from emissions regulation, particularly geothermal generation. Geothermal power plants should not be considered anthropogenic sources of greenhouse gas emissions. They involve no combustion, and geothermal resources are natural sources of emissions to the atmosphere. These natural sources would be producing greenhouse gases whether or not they were being used for power production purposes. Most fossil fuel power plant emissions are either a product of fuel combustion or a waste-product from that process.

Geothermal plants avoid both environmental impacts associated with burning fuels as well as those associated with transporting and processing fuel sources. Virtually all of the emissions associated with geothermal power can be attributed to the gases naturally occurring in the geothermal fluid used, and quantifying which emissions are anthropogenic (i.e. process emissions) and which are naturally occurring (and related issues such as to what extent natural emissions are reduced or offset by other actions taken in development and operation of a power plant) could create an overwhelmingly

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<sup>1</sup> As CARB has noted in its October 24, 2008 Staff Proposal *Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act*, “There is a scientific consensus that human activities, chief among them the burning of] fossil fuels, profoundly affect the world’s climate by increasing the atmospheric concentration of GHG beyond natural levels.

<sup>2</sup> As CARB notes in the Scoping Plan, “The move toward 33 percent renewables will, by definition, increase the diversification of California’s electrical supply. Increased use of wind, solar, geothermal and biomass (including from the organic fraction of municipal solid waste) generation will all add to ensuring the state has a broader portfolio of energy inputs.”

<sup>3</sup> A Development Plan for Geothermal in California: Challenges to and Solutions for Meeting California’s Geothermal Energy Future.” A copy is the abstract from the final report submitted to the CEC is attached, but the draft document is available at: <http://cgec.ucdavis.edu/pages/reports.html>

complex accounting and scientific morass that could impede development of important renewable energy resources.

Also, we would urge CARB to go beyond the immediate plan to ensure that key barriers to further geothermal development are addressed. The Scoping Plan relies heavily on a GHG reduction strategy that assumes the state will meet, a 2020 Renewable Portfolio Standard (RPS) of 33% bolstered and backed up by an emissions “cap and trade program” that is part of the Western Climate Initiative. The success of the proposed RPS standard and cap and trade program will be undermined if the Plan does not include actions and recommendations to address several very specific barriers.<sup>4</sup> High priorities that need to be addressed from a geothermal perspective are a significant upgrade and expansion of our electricity transmission system, and expedited leasing and permitting of geothermal development in known resource areas.<sup>5</sup>

It appears widely accepted that transmission improvements need to go hand-in-hand with additional renewable power development in California. Despite recent efforts such as the Renewable Energy Transmission Initiative (RETI), it does not appear that there is in place a near-term “fix” for the problem that California is facing: namely we cannot develop or access location-constrained renewable energy sources such as geothermal, solar and wind power without an expanded power grid.

For example, the future of one of the key transmission linkages between a major load center and one of the state’s largest geothermal and solar reserves: (the Sunrise Powerlink Project) is currently bogged down in debate at the California Public Utilities Commission (CPUC) Moreover, despite the statements of some environmental organizations in the Sunrise proceeding, the state’s RETI process does not contradict or argue against development of this transmission line. Instead, RETI simply points to the fact that a satisfactory transmission planning and development process has still not been found once we have identified high-value renewable energy “resource zones.” CARB’s Scoping Plan and follow-on implementation programs should recognize the need to promptly address transmission improvements and encourage progress towards resolution of this statewide problem.

Further, to provide clean, baseload power to the state’s transmission system, geothermal resources need to be leased and permitted for development in a timely manner by all levels of government acting collaboratively. While we applaud recent action by the Governor to encourage fast-track processing for renewable energy projects, geothermal projects in the state still suffer months and years of administrative delay. Prior research

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<sup>4</sup> The Scoping Plan does not adequately resolve or address current barriers to the expanded use of the state’s geothermal resources for renewable energy production, and underestimates recent warnings from the state’s own regulatory agencies monitoring the RPS Program regarding progress towards 2010 compliance goals. See the CPUC’s October 2008 RPS Quarterly Report.

<sup>5</sup> These comments focus on issues within or related to the State’s areas of jurisdiction. The extension of federal tax credits for geothermal energy are also a high priority action needed to encourage investment in new development.

by the Geothermal Energy Association has identified that time delays in project development are a major cost and risk factor for geothermal development.<sup>6</sup>

While the California Energy Commission and PIER program have supported a laudable guide to the complex leasing and permitting process in California,<sup>7</sup> serious delays continue to be typical of project development in the state. For example, a federal lease sold last year in the Geysers area of Sonoma and Lake Counties at a record price is still waiting for approval of the permits necessary for its development. Another example is the federal leases at Truckhaven in Southern California which have not been issued due to continued disputes about how to resolve conflicts with off-road vehicle users. Federal, state and local decision makers need to develop clear and explicit guidelines for the processing of leases and permits that expedite the process and set specific timeframes for taking action.

While these two issues – transmission improvements and streamlined processing of leases and permit applications-- are keys to developing the thousands of megawatts of geothermal reserves in the near-term, the geothermal resource base can provide significantly greater levels of clean energy for the state in the long-term. Greatly expanded resource assessment and technology development will be critical if we are to truly take advantage of the vast geothermal resources of California and adjacent western states. Some of the measures needed in this area have been addressed in a draft report to the California Energy Commission (CEC), entitled “A Development Plan for Geothermal in California: Challenges to and Solutions for Meeting California’s Geothermal Energy Future” (Abstract attached.)<sup>8</sup> Our understanding is that CEC is still reviewing this document, but its implementation should be a key part of CARB’s overall Scoping Plan.

Just as the Governor has recently given direction through Executive Order S-14-08 to state agencies to expedite transmission expansion to serve renewable energy areas, we would ask that CARB and the Governor create a similar sense of urgency and create a task force to identify geothermal specific initiatives to allow Californians’ to gain access to the thousands of megawatts of geothermal energy available for production and use. Put simply, doing so will help California achieve its RPS and climate mitigation targets more economically through expanded geothermal power production.

Thank you for considering our views.

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Executive Director  
Geothermal Energy Association

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<sup>6</sup> Hance, Nathanael, Factors Affecting Cost of Geothermal Power Development, August 2005, available at <http://www.geo-energy.org/publications/reports.asp>.

<sup>7</sup> Geothermal Permitting Guide, August 2007, available at: <http://cgec.ucdavis.edu/pages/reports.html>

<sup>8</sup> A copy is the abstract from the final report submitted to the CEC is attached, but the draft document is available at: <http://cgec.ucdavis.edu/pages/reports.html>

## **ABSTRACT: A Development Plan for Geothermal in California: Challenges to and Solutions for Meeting California’s Geothermal Energy Future”<sup>9</sup>**

Prepared for the California Energy Commission’s Public Interest Energy Research Program by the California Geothermal Energy Collaborative

California has established aggressive foals to increase the use of renewable energy resources (via its Renewable Portfolio standard [RPS] goals) and decrease greenhouse gas (GHG) emissions (Assembly Bill (AB) 32 – mandated GHG goals). Geothermal energy has historically been the most significant renewable energy source in the state. However, the growth of geothermal energy has stalled, despite overwhelming evidence that a large, untapped resource base exists. The California Geothermal Energy Collaborative (CGEC) has undertaken an effort to identify the key challenges that must be overcome to address this problem, and proposals for resolving them. This report summarizes the results of that effort. It is intended that these results will provide the framework for development of a detailed R&D roadmap that can contribute to the Strategic Renewables Roadmap currently being developed by the Renewables Energy Generation Research Office within the California Energy Commission.

Three areas were identified that, if addressed, could significantly improve the ability of geothermal energy to contribute to the state’s ability to meet its RPS and AB32 goals – resource assessments, permit and lease issues, and policies.

Current resource assessments of the incremental geothermal resource vary by nearly an order of magnitude, from about 3,000 MW to over 24,000 MW and higher. This range in resource estimates reflects contrasting assumptions and assessment methodologies, as well as uncertainties in the available databases. There is good scientific reason to believe that hidden resources exist throughout the state that could significantly increase those resource estimates, but technology is currently inadequate to pinpoint those resources or evaluate their quality. Also, resources that could support distributed generation, areas with enhanced geothermal potential (i.e., so-called “Enhanced” or engineered geothermal systems, also known as EGS), and other advanced technology-based exploitable resources have not been identified in state efforts, and are only beginning to be evaluated at the federal level. In addition, existing assessments have not considered the impact of installation of high efficiency GSHP systems would have by displacing electric use of HVAC.

Streamlining permit and lease processing is impeded by inconsistent local regulations, misunderstandings of geothermal systems and their benefits and impacts, and inadequate public awareness of resource availability. There is also insufficient educational material and training available for the development of local industries. The absence of standards within the regulatory and industrial sectors compounds confusion over how best to promote the use of geothermal resources.

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<sup>9</sup> The final report dated October 28, 2008 was submitted to the CEC and is under review, but the draft document is available at: <http://cgec.ucdavis.edu/pages/reports.html>. Given its direct relevance to these proceedings we felt it was important to call this report to your attention.

Moving renewable energy technologies to market depends upon supportive policies and incentives. Loss of Federal support has complicated the ability to develop policies that support technology growth. This situation exacerbates an already challenging financial environment for investment in geothermal power production since this technology is often heavily weighted toward initial investment and long time-to-market. To address these issues, an analysis of productive incentive strategies needs to be provided to regulators and legislators, in order to encourage investment. Policy recommendations and examples, and supporting analysis of impacts, need to be developed to assist the legislative and regulatory communities in their analysis of useful approaches for encouraging resource growth. They should be developed for the full range of technology/resource possibilities, ranging from distributed power and heat to large scale EGS projects.

Specific recommendations for each area were developed and are detailed in the body of this report.

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