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CLIMATEMASTER®
Geothermal Heat Pump Systems

January 13, 2011

California Energy Commission
Docket Office, MS-4
Re: Docket No. 11-IEP-1A
1516 Ninth Street
Sacramento, CA 95614-5512
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Re: California Energy Commission Docket No. 11-IEP-1A: Comments on the Scope of the 2011 Integrated Energy Policy Report

To Whom It May Concern:

Climate Master wishes to thank the California Energy Commission (Commission) for this opportunity to comment on the 2011 Integrated Energy Policy Report (IEPR) scope and bring to the attention of the Commission important information about an overlooked, highly efficient heating and cooling technology. These comments are in response to the Commission's August 31, 2010 "Committee Scoping Order" and are based on recent energy modeling studies conducted by Climate Master and verified by Oak Ridge National Laboratory.

Climate Master is a manufacturer and national sales leader of some of the most energy efficient active heating and cooling (HVAC) equipment known today, the GeoHeat Pump, also known as the Ground Source Heat Pump (GSHP). This HVAC equipment is widely used in the U.S. Midwest and Northeast and in Europe with a 30 year history of use in residential, commercial, and military applications. However, it is not widely used in California despite the fact that the equipment is now:

- highly reliable,
- cost effective,
- reduces peak electricity demand significantly, and

- reduces overall energy use dramatically for heating, cooling, and domestic water heating.

GSHPs can be appropriately used for residential (single family and multi family) new construction and retrofits and for small to medium commercial in all moderate to severe climate zones. Further, it is often considered a renewable energy technology measure since it uses the replenishable energy of the earth.

Despite the outstanding performance characteristics of GSHPs and their ability to satisfy California's energy policy driving forces (reliability, efficiency, and affordability), the Energy Commission makes scant mention of GSHP technology in Commission policy reports nor does it highlight GSHP equipment as a preferred choice for consumers, builders, and utilities to consider when making HVAC choices.

Climate Master believes that GSHPs meet all the criteria for them to be embraced by the Commission and attributes this oversight to outdated information. As such, Climate Master wishes to bring this issue to the attention of the Commission in this current proceeding and requests the Commission to conduct a workshop on this technology category as a means to:

- reduce peak electricity demand,
- reduce overall energy consumption for heating, cooling, and domestic hot water (DHW),
- reduce greenhouse gas (GHG) emissions,
- reduce consumer's individual energy bills,
- reduce utility system costs,
- achieve California's renewable energy targets,
- achieve the "Net Zero Home" goal, and
- increase the opportunity for additional peak electricity load management.

Climate Master is conducting screening level energy modeling analyses of homes in key locations throughout the U.S. to better understand the value of GSHPs to consumers, utility planners, and energy policymakers. These analyses are being conducted using a U.S. DOE Build America Home model with review by Oak Ridge National Laboratory (ORNL) and using U.S. DOE recommended standardized homes. The analyses use local weather data for each location.

Climate Master recently completed its analysis for the Sacramento region comparing a new home with GSHP to a new home with a highly efficient A/C unit and natural gas heater and water heater[1], a new all electric home with a highly efficient air source heat pump and electric water heater[2], and an older home[3].

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[1] SEER 14 A/C, 94% efficient NG furnace, and 76% efficient NG water heater
[2] SEER 14 A/C, 94% efficient water heater
[3] SEER 10 A/C, 80%efficient NG furnace, and 76% efficient NG water heater

The GSHP home reduces total energy consumed for A/C, heating, and DWH by 68% compared to the new gas/electric home, 42% compared to the new all electric home, and 73% compared to the older home.

Just as dramatic, the GSHP home reduces peak summer electricity demand by 34% compared to the new gas/electric home, 39% compared to the new all electric home, and 44% compared to the older home. Actual peak electricity savings will likely be greater than modeled since GSHP units continue to operate at the rated efficiency at all outside temperatures even when summer peak temperatures climb above 110 degrees F and air source A/C units' performance degrade dramatically.

Reductions of this magnitude are hard to achieve with most other energy efficiency and/or peak electricity reduction programs. These GSHP units are commercially available in California, yet the Commission has not recognized this technology choice with any of the enthusiasm that it has recognized other popular energy efficiency and renewable energy electricity technologies.

The federal government has recognized GSHPs as one of the most energy efficient active heating and cooling equipment in use today[4]. The federal government also provides tax credits similar to the solar PV credit yet with a longer deadline and no maximum limit. California barely mentions them, and California utilities do not offer incentives for consumer consideration as they do for other popular energy efficiency and renewable energy technologies.

Climate Master believes GSHPs should be an important component of California's portfolio of preferred technologies and requests the Commission to include a review of this technology in its 2011 IEPR proceedings. If the Commission's independent review of this information verifies the screening analysis results that Climate Master has already conducted, then it requests the Commission to highlight GSHP technology as a preferred means to achieve California's energy policy goals, a status on par with other technologies the Commission has already selected for highlighting. Such recognition is the basis to encourage both consumers and utilities to consider this commercially available technology and develop incentive programs similar to those that are being offered to solar PV.

Climate Master offers to provide the Commission with technical information on this technology and to participate in workshops on various policy issues that affect this technology and its applications.

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[4] Oak Ridge National Laboratory, "Assessment of National Benefits from Retrofitting Existing Single-Family Homes with Ground Source Heat Pump Systems, Final Report", August 2010; U.S. EPA, "Geothermal heat pumps (GHPs) are among the most efficient and comfortable heating and cooling technologies currently available, because they use the earth's natural heat to provide heating, cooling, and often, water heating.", http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=HP, January 2011.

Again, Climate Master thanks the Commission for considering this important energy policy issue and looks forward to actively participating in upcoming workshops and hearings. Please feel free to contact me or our local representative David Maul of Maul Energy Advisors (dave@maulenergyadvisors.com or 530-304-8096) at any time.

Sincerely,

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