

California Energy Commission

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CALIFORNIA GEO
California Geothermal Heat Pump Association

Barriers to Rapid Wide Spread Deployment of GHP Technology

If GHPs are so great then why?

“California is currently the home to 12.1 percent of the country’s population, represents only 2.3 percent of ground source heat pump activity”

Source: Project Negatherm

A red brick wall with the word "Barriers" written in yellow. The bricks are arranged in a standard running bond pattern, and the mortar is a light grey color. The word "Barriers" is centered horizontally and vertically on the wall.

Barriers

Barrier Analyses and Classifications

- **Analyses**

- Geothermal (Ground-Source) Heat Pumps: Market Status, Barriers to Adoption, and Actions to Overcome Barriers (Patrick Hughes, ORNL/TM-2008/232)
- PROJECT NEGATHERM FOR GROUND SOURCE HEAT PUMPS: Improving the Geothermal Borehole Drilling Environment in California (Dennis Murphy, CEC-500-2011-025)

- **Barrier Classifications**

- Endemic to the technology
- Self inflicted - Regulatory and Systemic
 - Focus of AB-2339 (www.ab2339.org)

Endemic Barriers to GHP (Hughes)

- High first cost of GHP systems to consumers
- Lack of consumer knowledge and/or trust or confidence in GHP system benefits
- Lack of policymaker and regulator knowledge of and/or trust or confidence in GHP system benefits
- Limitations of GHP design and business planning infrastructure
- Limitations of GHP installation infrastructure
- Lack of new technologies and techniques to improve GHP system cost and performance
- Poorly informed design engineers (CaliforniaGeo)

Regulatory and Systemic Barriers to GHP

Perceptions within CEC

- GHPs don't work or
- They don't work in California
- Where is the industry?

~~Lack of an organized industry~~ – CalGeo >>> CaliforniaG

Regulatory and Systemic Barriers to GHP (cont.)

Lack of published loop construction Standard

- draft Geothermal Heat Exchange Wells, April 1999

Poor definition in CA WATER CODE SECTION 13713

Geothermal heat exchange **well**," as used in this chapter, means any uncased artificial excavation, method, that uses the heat exchange capacity of the earth for heating and cooling, in which excavation ambient ground temperature is 30 degrees Celsius (86 degrees Fahrenheit) or less, and which excavation uses a closed loop fluid system to prevent the discharge or escape of its fluid into surrounding aquifer or other geologic formations. Geothermal heat exchange **wells** include ground source heat pump **well**

“Regulatory Quagmire”

Regulatory and Systemic Barriers to GHP (cont.)

Lack of inclusion in IEPR - *A seat at the table*

- SB 758
- On-bill financing programs
 - Charter should be changed
- Prop 39 implementation

Tiered rate structure disincentivizes GHPs

T-24 compliance software does not fairly recognize GHP performance

HERS rating and inspection protocols not defined for GHP

Regulatory and Systemic Barriers to GHP (cont.)

GHP is NOT included in California's Renewables Portfolio Standard (RPS)

- GHPs: energy efficiency measure or renewable energy technology?

Both

- Feds and states treat GHP as renewable energy
 - DOE
 - General Services Administration
 - Military
 - HUD Title 1 – Power Saver
 - Department of Agriculture
 - Various State RPS initiatives

Opportunity for renewed leadership

Regulatory and Systemic Barriers to GHP (cont.)

An “all in” approach to meeting RPS, ZNE and Net Zero goals

- Why exclude viable technology: “Technology that produces electricity”
 - Penalizes GHP AND solar thermal: “*Non-generating renewable technology*”

CPUC Position on GHP

Geothermal heat pump is a central heating or cooling system that pumps heat to or from the ground. It uses the earth as a heat source (in the winter) or a heat sink (in the summer). It could be **characterized as both a renewable distributed resource as well as an energy efficiency resource**, since it uses geothermal heat to reduce a building’s electricity requirements.

Since geothermal heat pumps impact the heating and cooling electric and gas loads for a building, they should be assessed in the energy efficiency potential studies to determine whether they provide cost effective energy savings. If they are determined to be cost-effective, then they would be **included in the utility energy efficiency goals**.

When enacted, AB 2339 would require the development of new programs, using unnecessary state resources to support technologies that **already qualify for review within the CPUC’s existing customer distributed generation and energy efficiency programs**.

Source: CPUC AB 2339 Analysis

The GHP Industry's Position

Increased deployment of GHPs will:

- Reduce the need for fossil fuel powered peak generation
- Improve utility load factor
- Provide on-site consumer energy savings without the need for rebates
- Provide all of the benefits that drive the desire for renewable energy standards without putting pressure on electric rates or ratepayers energy bills
- Increase in-state jobs

Removing barriers will enable market forces to grow the GHP industry



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“Unifying California's geo industry and removing barriers to widespread deployment of GHPs”