



**California Energy Commission
2013 Integrated Energy Policy Report (IEPR)**

**Staff Workshop on Assembly Bill 2339 Requirements
Geothermal Heat Pump (GHP) Systems
Potential for California
March 21, 2013 – 10 am**

AGENDA

Introduction (10:00)

Suzanne Korosec, IEPR Lead
Joe Loyer, Mechanical Engineer, California Energy Commission

Opening Comments (10:10)

Ms. Sara Arce, Legislative Aide, Office of Assembly Member Williams
Ms. Hazel Miranda, Senior Policy Advisor to Commissioner McAllister
Phil Henry, President of CaliforniaGeo - California Geothermal Heat Pump Association, Inc.
Joe Loyer, Mechanical Engineer, California Energy Commission

Session One (morning session): What are GHPs and how do they work? (10:30)

Presentations:

Lisa Meline, P.E., Meline Engineering Corporation, and CaliforniaGeo Chair
"Geothermal Heat Pumps (GHP-101)"

Steve Kavanaugh, Ph.D., Professor Emeritus of Mechanical Engineering, University of Alabama

"SEER, HSPF, EER, COP, kW/ton, and System Efficiency"
"Field Study: Performance of Commercial GSHPs"

Panel Members:

Lisa Meline
Steve Kavanaugh
Phil Henry

Panel Topics:

1. What makes it a Geothermal Heat Pump System?
2. The building/process system and the loop
3. Hybrids and enabling other heating and cooling technologies

4. How do GHPs differ from conventional HVAC systems?
5. Life cycle cost analyses of GHPs.
6. GHP in Energy Star Benchmarking Building Performance
7. EER/COP vs SEER/HSPF
8. Case studies
9. Public Comments and Questions

12:00 Lunch Break

Session Two (afternoon): What are the Potential Benefits for California (1:00 – 2:50)

Presentations:

Paul Bony, Director of Residential Market Development & Western Region Sales, ClimateMaster.
“Geothermal Heat Pumps a Key Ingredient in a Net Zero - Low Carbon Diet”

Marc Hoeschele, Engineering Director, Davis Energy Group, Inc.
“Results of 2010 PG&E Assessment of GHP as a ZNE Residential Strategy in California”

Phil Henry for **Xiaobing Liu, Ph.D., LEED AP, CGD**, R&D Staff, Building Technology Research and Integration Center, Oak Ridge National Laboratory
“Benefits of Residential GHP Retrofit and Impact GHP on 12GW by 2020 Goal”

Paul Bony, Director of Residential Market Development & Western Region Sales, ClimateMaster.
“Geothermal Heat Pumps a Utility and Public Policy Perspective”

Panel:

Phil Henry
Paul Bony
Marc Hoeschele

Panel Topics:

1. Public Comments and Questions.

10 min Break (approximately 2:50pm)

Session Three (afternoon session): What needs to be done for California to realize the benefits of GHPs? (3:00 – 3:50)

Presentations:

Phil Henry, President of CaliforniaGeo - California Geothermal Heat Pump Association, Inc.
“Barriers to rapid wide spread deployment of GHP Technologies”

Rob Hudler, Energy Commission Specialist I, California Energy Commission

“Current Treatment in Energy Compliance and the Pathway to Including Ground Source Heat Pump in Title 24, Part 6 Energy Calculations”

Julie Haas, PE, Senior Water Resources Engineer, California Department of Water Resources, Division of Integrated Regional Water Management, Regional Planning Branch

“Geothermal Heat Exchange Well Standards Update.”

Topics:

1. Are there energy policy and program barriers that need to be addressed?
2. Are there market and deployment barriers to their use?
3. Are there Utility tariff and program barriers that penalize their use?
4. Are there cost barriers and cost effectiveness barriers that reduce interest?
5. Are there regulatory barriers that need to be removed?
6. Are there technology barriers that need to be resolved?
7. Are there industry capability barriers that are overlooked?
8. Public Comments and Questions

10 min Break (approximately 3:50)

ROUND TABLE: California Strategic Plan for Wide Spread Deployment of GHP (4:00 – 5:00)

Issues/Topics

1. Provide public education on the benefits of these systems to increase awareness in the marketplace?
2. Provide professional education to generate a California GHP workforce?
3. Make policy changes that incorporate ways to support the use of GHPs?
4. Make utility program changes to provide financial incentives and financing to support customer choices?
5. Identify regulatory barriers, if any, that exist and potential strategies to address them.
6. Ongoing Working Group Participants.
7. What federal and other state programs that California should consider?
8. What are other state utilities doing with GHPs?
9. Public Comments and Questions

Panel: All panelists from the day

Paul Bony, Director of Residential Market Development & Western Region Sales, ClimateMaster.

Shawn Melton, Vice President of Sales, Enertech

Sean Dillon, Regional Manager, WaterFurnace

Marc Hoeschele, Engineering Director, Davis Energy Group, Inc.

Randy Dockery, Gregg Drilling & Testing

Lisa Meline, P.E., Meline Engineering Corporation CaliforniaGeo, Chair

Rob Hudler, Energy Commission Specialist I, California Energy Commission

Steve Kavanaugh, Ph. D., Professor Emeritus of Mechanical Engineering,
University of Alabama

Adjourn

Studies & Resources:

Project Negatherm for Ground Source Heat Pumps: Improving the Geothermal Borehole Drilling Environment in California, Final Report, Prepared for the California Energy Commission by Dennis Murphy, GroundSource Geo, Inc., July 2011. CEC-500-2011-025, Public Interest Energy Research (PIER) Program
<http://www.energy.ca.gov/2011publications/CEC-500-2011-025/CEC-500-2011-025.pdf>

California Energy Commission, Consumer Energy Center,
Geothermal or Ground Source Heat Pumps:
http://www.consumerenergycenter.org/home/heating_cooling/geothermal.html

Kirk Mescher (CM Engineering) has been monitoring a collection of case studies of schools in Illinois (The Illinois Study) for the past three years. The write-ups are at the following link:
<http://www.cmeng.com/case/index.php>

Assessment of National Benefits from Retrofitting Existing Single-Family Homes with Ground Source Heat Pump Systems Final Report, August 2010. Xiaobing Liu, Energy and Transportation Science Division, Oak Ridge National Laboratory.

Evaluation, Measurement & Verification Report for the Residential Ground Source Heat Pump Program, Prepared for the Redding Electric Utility, FINAL, December 2004. Robert Mowris & Associates.

Geothermal (Ground-Source) Heat Pumps: Market Status, Barriers to Adoption, and Actions to Overcome Barriers, December 2008. Patrick J. Hughes, Energy and Transportation Science Division, Oak Ridge National Laboratory.