A ***2022*** Annual Report for ***CaliforniaGeo***

CALIFORNIA GEO
California Geothermal Heat Pump Association

What are we about?

This report attempts to capture the activity of our Association over the past year. We present this year's highlights for review by our 34 **supporting members** (all practitioners in the geo industry) our 24 Affiliate members, and our upstream industry leaders IGSHPA® (the **International Ground Source Heat Pump Association**) and GEO® (the **Geothermal Exchange Organization**). Both support our efforts as we support theirs.

We are a non-profit 501 c6 all-volunteer trade association with a **history**; working for progress to bring more greenhouse gas-free geo heat pump heating, cooling, and hot water production to California. Our Board of Directors **meets bi-monthly** via our online Zoom platform and all members are welcome to attend.

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The Overview—

This year, the acceptance of climate change expanded. Public utilities, local governments, businesses of all kinds, and the U.S. military recognized the increase in cost from extreme weather events and disaster response and repairs. The words "resilience" and "sustainability" became more common. Insurance premiums have gone up while coverage eligibility has declined. The continuing evidence of a multi-decade southwestern drought threatens sustainability of cities and agriculture because of water and hydropower losses in the Colorado River watershed. The low acreage "luck" of California's 2022 wildfire season is still overshadowed by 2021's extreme losses which included property value loss, penalizing both residents and their local governments.

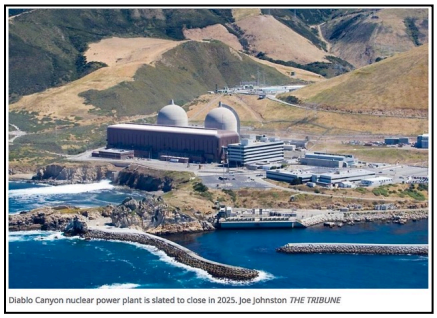
Even though more worldwide citizens have accepted the existence of climate change brought on by global warming, the COP27 Summit in Egypt did not fully succeed. The question of whether historic champion emitters in the developed world should or will pay for carbon reduction elsewhere is still unsettled while the time for effective action dwindles. Independently, the U.S. passed legislation that committed to the largest expenditure *ever* for carbon reduction—a positive note.

Locally, In California—

Northern California's major utility, investor-owned Pacific Gas & Electric has expanded their program to put electric lines underground, isolating them from flying branches that can damage overhead conductors or shower dry ground with sparks that could ignite wildfires. This multi-year project is been described as costing $9.5 Billion.

The statewide grid experienced its biggest test in August, as a needed **Flex Alert** requested business and consumers to lower their 4-to-9 PM consumption. Cooperation over five days of heat wave avoided 2020's rolling blackouts.

Decarbonization (via electrification) occurred in more existing and new buildings. Over 70 local cities and government jurisdictions have banned the expansion or use of gas in occupied space. While a great boon to outdoor (and indoor) emissions reductions, this is a greater load on the statewide electrical grid. Surprisingly, PG&E's 2017 plan to close Diablo Canyon Nuclear's 2,200 Megawatts of generation by 2025 became opposed by Governor Newsom, who, with the Legislature's help, made a $1.5 Billion loan to keep it going past 2025 to keep the grid more resilient.


Diablo Canyon nuclear power plant is slated to close in 2025. Joe Johnston *THE TRIBUNE*

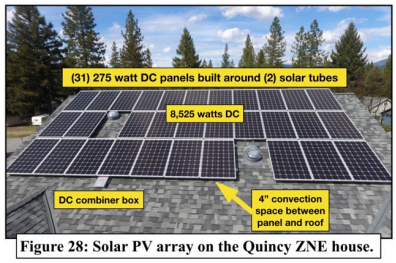
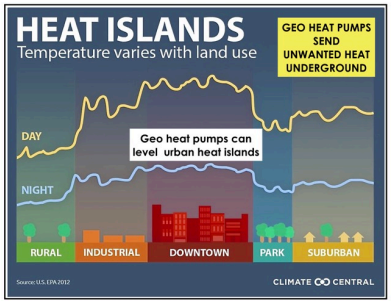


Figure 28: Solar PV array on the Quincy ZNE house.

The expansion of solar PV power for the rooftop of every new home (or virtual metering connected to the utility's off-site facility) helps offset consumption by all-electric homes. But, periods of heavy demand can occur during the cooling season unless on-site battery storage expands. An increase in electric vehicles will not make for a demand reduction. Wider expansion of geo heat pumps instead of air-based equipment could markedly reduce HVAC electrical demand, especially during hot weather, without heat islands. Ten years of 30% federal tax credits (via The Inflation Reduction Act) is the best our industry has ever seen and should help expand geo.

Death Valley, Calif., recorded a temperature of 127 degrees Fahrenheit on Thursday. (Reuters video)



In 2013, we worked with the State Dept. of Water Resources (DWR) and others to review new standard language (required by AB 2339) for what DWR insists is a "Ground Heat Exchange Well." That language was unfavorable to our industry considering the new installation features it called for. DWR then took a multi-year pause due to extreme drought. A re-start in 2021 covered a larger Well Standard Revision (Bulletin 74) intended to regulate ***four*** types of drilling technology. Our reps joined DWR-organized technical advisory committees to review and propose edits. DWR will publish their draft regulations in 2023 and our industry is still very worried about this approach challenging or eliminating vertical drilling in California.

What We've Been Doing—

At CaliforniaGeo, we spent much of 2022 continuing to implement a part of our 2020 **Strategic Plan**. We have worked on internal procedures we refer to as *Guidance Documents* that define **how** we operate and **who** carries out the tasks

that keep our organization growing. We've expanded our Board of Directors to nine, each with a three-year term in staggered sequence. We want new leaders, elected from our membership, to take their turn to maintain momentum.

We remain an *AIA Continuing Education Provider* and will work toward development of a future curriculum centered on the Bi-National Standard ANSI/ CSA/IGSHPA-448 for residential and commercial geo systems. We believe this standard is the best way to get building officials, architects, and mechanical engineers comfortable with geo applications.

We continue our 1-hour bi-monthly series called ***THE UNDERGROUND***. We offer a variety of topics for audiences of varied technical skill from a general-interest-to-expert level on efficiency, HVAC applications for geo heat pumps, decarbonization policy and regulation, etc. One of our sessions was led by the **Building Decarbonization Coalition**, and it focused on current trends of building without carbon dependence.

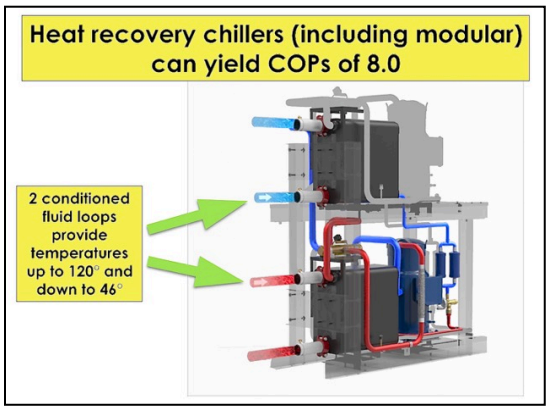
Statistics—
Our website now features **87** **Blog posts**. It holds **136** **News Posts**, split among four categories (some with commentary). These features by major news organizations parallel our efforts to expand member knowledge and public awareness. We also maintain a **Document Library** feature on our website with downloadable content split into seven sub-sections.

The subject of GHP installations in California continues to rank as our website's top spot visited and our membership directory is never far behind. I get emails and phone calls through our website's **Contact Us** page, and we continue to respond to a variety of inquiries. We inform, educate, and advise those with geo interest—passing them off to our professional members who specialize in filling such needs. Many of those requests continue from southern California, where we lack enough professionals who can assist.

We are pleased that our website visitation continues to grow. It is serving as an educational tool for many who are searching out green technology. An increasing volume of those with interest in green technology are visiting our website.

We continue using our personalized bulk mailing system (Constant Contact) having reached **263** separate promotional messages in support of the GeoExchange® industry. Our contact list is now close to 500 targets, segmented into seven sub-list categories and we are reaching people throughout the U.S. and Canada.

Technology—



Aside from being emissions-free with long life, geo equipment's key benefit is maximum efficiency with low electrical demand. The COP performance of residential units is now over 5.0 and larger buildings can reach 8.0 in certain applications. In new lots or subdivisions, being all-electric brings lower initial development costs when gas line infrastructure becomes unnecessary. Geo heat pumps fit a renewable electricity, carbonless world better than anything else! As New York's Dandelion explains, it's ***Heat Without Fire!***

Our equipment continues to make modest efficiency gains, and a growing segment of our advancement is centered around the *application* of this technology. Therefore, *design* is becoming more important, and this heightens the need for *training*—a mechanism that can illustrate both the risks and best practices to tap renewable thermal sources underground. This is the path we must walk if we are to decarbonize living spaces across the country.


Photo by Jason Richard on Unsplash

That's our summary for 2022 from CaliforniaGeo.

Bill Martin, President

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Access to membership or renewals is **HERE**.