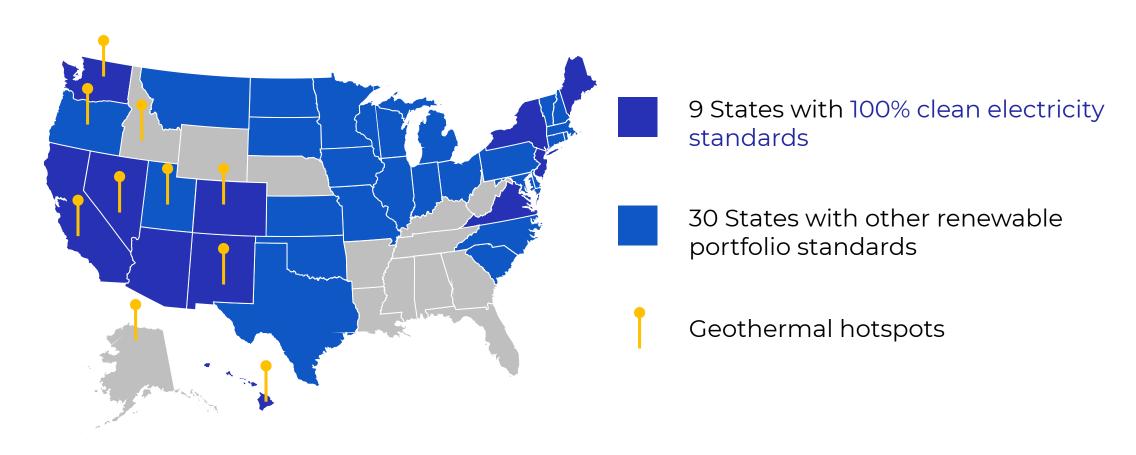


ITIF Earth, Wind and Fire December 7, 2021

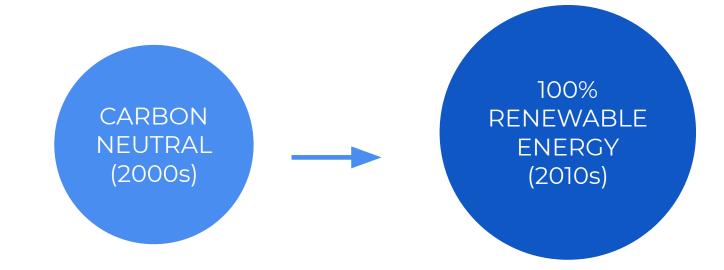


# 9 STATES HAVE ADOPTED 100% CLEAN ELECTRICITY LAWS





## THE WAY CLEAN ENERGY IS BOUGHT IS CHANGING



24/7 CARBON-FREE ENERGY (2020s)

Buy carbon offsets to "neutralize" carbon emissions

Buy renewable energy to "match" annual electricity consumption

Buy 24/7 clean energy at every location worldwide

Google Walmart LADWP Microsoft

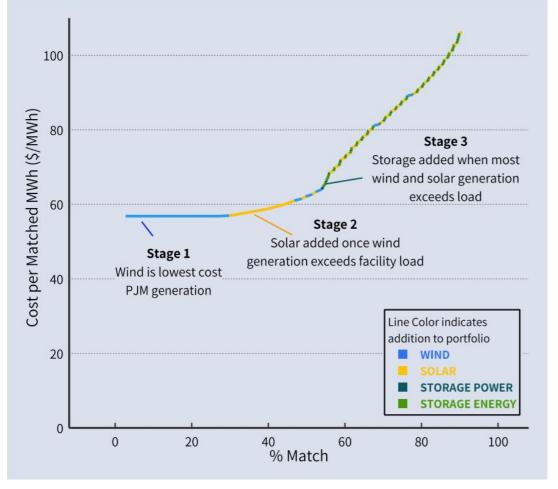


## WE CAN'T JUST BUILD MORE WIND AND SOLAR

Wind and solar only get us 60-80% of the way there due to diminishing marginal returns

Study after study shows a firm, no-carbon resource is required to hit decarbonization targets

July 2021 California Public Utility Commission Order require 1000 MW of "clean firm power" to be procured by 2026.



Source: RMI



# BUYERS ARE TURNING TO GEOTHERMAL FOR 24/7 ENERGY

15 new Power Purchase Agreements since 2020

WE WILL TAKE AS
MUCH GEOTHERMAL
AS YOU HAVE AS
QUICKLY AS YOU
CAN DELIVER IT.

— Western Investor-Owned Utility















Average PPA Price from since 2019 is \$68/MWh. Buyers place a \$30 to \$40/MWh premium to solar + storage.



## FERVO AND GOOGLE EXECUTE FIRST CORPORATE GEOTHERMAL AGREEMENT

Fervo has signed an agreement with Google on pilot project development for delivery in 2022.

Actively drilling and developing this project today.

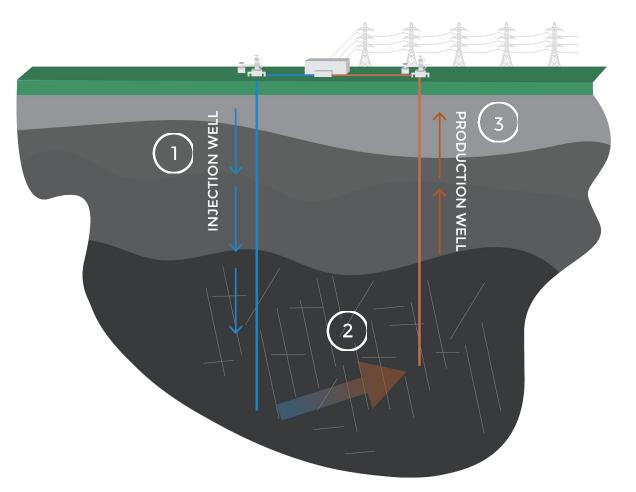
Many other corporate buyers are starting to join Google in the 24/7 Carbon-Fee Initiative.

With new geothermal project, it's full steam ahead for 24/7 carbon-free energy





#### HOW GEOTHERMAL WORKS TODAY

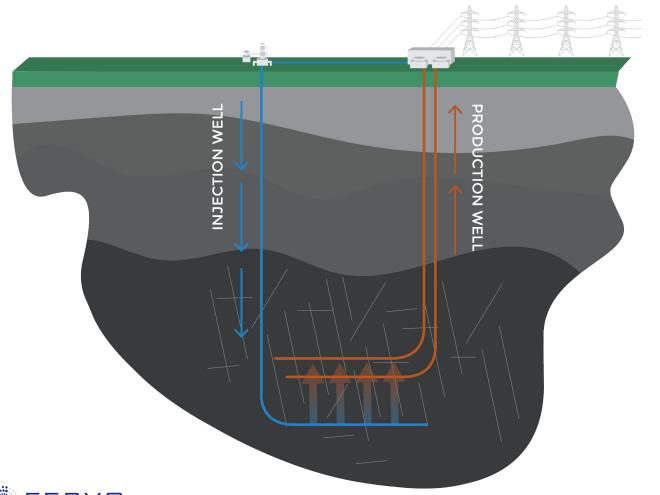


- 1 Deep wells inject cool water
- Water heats up as it flows through the subsurface and returns through production wells
- Steam at the surface generates electricity without emissions

1 out of every 3 geothermal wells are "dry holes" because they cannot support commercially viable flow rates



### NEW TECHNOLOGY IS OPENING NEW DOORS



Advancements in directional drilling, high temperature downhole tools, better data sensing, and lower cost power conversion technology are dramatically lowering the cost of geothermal.

Drilling productivity in the oil and gas industry has improved by **10X in the last 10 years**, opening the door to new tech transfer opportunities for geothermal.



# DOE LEADING TECHNOLOGY SUCCESS IN THE FIELD

The Utah FORGE project is a DOE funded initiative to develop and test new geothermal technologies at the field level.

In 2021, FORGE completed a 65° deviated well to 10,987 ft. and 228° C in half the originally planned drilling time.

Some parameters in the FORGE drilling program already met or exceeded assumed "Ideal" technology performance from 2050.







### THE PRIZE FOR GETTING GEOTHERMAL RIGHT IS SUBSTANTIAL

#### **Geothermal energy is poised for a big breakout**

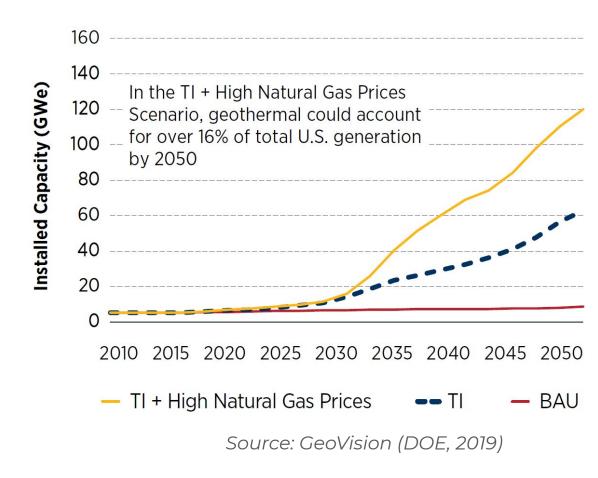
"An engineering problem that, when solved, solves energy."

By David Roberts | @drvolts | Oct 21, 2020, 8:30am EDT

Geothermal has the potential to scale to decarbonize the last part of the electric grid that we know will be challenging.

The GeoVision study shows a pathway to 16% of US electricity, and technology has advanced rapidly since then.

Market for geothermal limited by natural gas in GeoVision, much more potential with serious climate policy.





#### WE NEED TO SEIZE THE MOMENT

New Infrastructure Bill includes \$84 million for geothermal demonstration funding, an important increase.

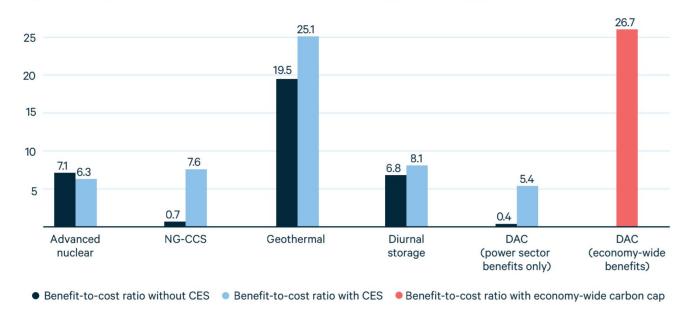
-Even more opportunities in Build Back Better.

Historically, geothermal has been the least funded technology sector in clean energy.

Geothermal is ready to deploy with rising market opportunity. Targeted RD&D funding today would lead to a breakout success.

-Estimates of benefit-to-cost ratio for increased geothermal RD&D spend are **20-25X**.

Figure 4. Estimated Benefit-to-Cost Ratios from 10 Years of RD&D Funding



Source: The Value of Advanced Energy Funding (RFF, 2021)

