

Utilities Policy Advisory Committee (UPAC)

Wednesday, September 3, 2025

8:00 a.m. – 10:30 a.m.

Blue River Board Room

121 S. Tejon Plaza of the Rockies or Microsoft Teams

[Join the meeting now](#)

If you require an ADA-accessible version of this packet of information, please send an email to ub@csu.org or call 719-448-4800.

8:00 a.m.	1.	Call to Order	
8:05 a.m.	2.	Approval of August 6, 2025 UPAC Meeting Minutes	Decision
8:10 a.m.	3.	State of Colorado Energy Office	Discussion
9:30 a.m.	4.	Geothermal Assignment Timeline	Discussion
10:20 a.m.	5.	Customer Comment Residents can provide comment in person, by joining the meeting from computer or by phone using the link above. If you would like to speak during the customer comment period, please sign up to speak through BoardSubmissions@csu.org prior to the meeting.	Discussion
10:25 a.m.	6.	Committee Member General Discussion	
10:30 a.m.	7.	Adjournment	

Next meeting: October 1, 2025

Note: UPAC Bylaws, Rule 6: Customer and Public Comment: (b) At the discretion of the Chair, or the majority of the Committee Members present, customers and members of the public will be allowed to comment or ask questions concerning items discussed at regular meetings or concerning matters discussed at special meetings. Comments or questions by individuals will be limited to five minutes each, and all customer or public comments will not exceed twenty minutes on any agenda item unless time is extended by the Chair or majority of the Committee Members present.

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Wednesday, August 6, 2025

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1. Call to Order

Chair Katherine Danner called the meeting to order at 8:00 a.m..

Present – Vice Chair Michael Borden, Committee Member Larry Barrett, Committee Member Chris Meyer, Committee Member Scott Smith, Committee Member David Watson, Alternate Member Albert Badeau and Alternate Member Tom Carter

2. Approval of July 2, 2025 UPAC Meeting Minutes

Committee Member Smith made a motion to approve the meeting minutes and Vice Chair Borden seconded the motion. The minutes passed unanimously.

3. Geothermal Power Generation in Chaffee County—Mt. Princeton Geothermal, LLC

Mr. Hank Held, Mr. Fred Henderson, and Mr. Michael Albrecht, founders of Mt. Princeton Geothermal, LLC., presented the Geothermal Power Generation in Chaffee County and gave an overview of what their company has done in Buena Vista, Colorado.

Committee Member Meyer asked if there were any special requirements for drilling the down holes. Mr. Albrecht stated they are using existing drilling materials used to drill oil and gas.

Committee Member Watson requested an explanation of the difference between the Turkey and Iceland powerplants. Mr. Albrecht explained that the powerplant in Turkey handles lower temperatures as opposed to the powerplant in Iceland.

Committee Member Carter asked for the distance between the prison and the energy source. Mr. Held stated the prison is about three miles from the energy source. Chair Danner asked for clarification on the economics of the plant system structure. Mr. Held explained that due to high cost, it is more beneficial to find heat sources that are near existing distribution lines.

The committee discussed the feasibility of generating power to the City of Colorado Springs and why the powerplant is only able to withhold 10 megawatts (MW) of power.

Vice Chair Borden asked if the steam from the powerplant was in a closed loop cycle. Both Mr. Held and Mr. Albrecht confirmed all the steam is enclosed.

Chair Danner inquired about community support around the site locations. Mr. Held stated those who are opposed are out of state residents who have vacation homes in the area. Chair

Danner commended Mr. Held and Mr. Albrecht for having a path forward even with opposition.

Mr. Held asked the committee for a letter of interest to move forward a partnership with Utilities. Ms. Natalie Watts, Strategic Planning and Governance Manager, advised this committee is a policy advisory committee and their task is to gather research for the current geothermal assignment. She stated UPAC is unable to make a commitment. Ms. Lisa Barbato, Chief System Planning and Projects Officer, followed up by stating Springs Utilities is looking into their Integrated Resource Plan and geothermal energy will be a part of it. She confirmed Springs Utilities is not ready to submit a letter of interest at this time.

The committee thanked Mr. Held and Mr. Albrecht for their presentation and all the information they provided.

The committee took a break at 9:45 a.m. and returned at 9:51 a.m.

4. Geothermal Assignment Timeline

Ms. Bethany Schoemer, Strategic Planning and Governance Specialist, discussed the approved geothermal assignment scope and the draft timeline.

Vice Chair Borden referenced getting someone from the Distributed Energy Resources (DER) to come and speak.

Committee Member Burghart suggested recommending the Utilities Board not lose sight of geothermal energy.

UPAC members discussed the relevance of proposed guest speakers to the assignment scope.

Committee Member Meyer proposed revisiting the timeline after the September meeting. All members of the committee agreed to reassess at that time.

Chair Danner suggested holding a workshop in the middle of October to further discuss key topics of the assignment scope. The idea was supported by other committee members.

5. Customer Comment

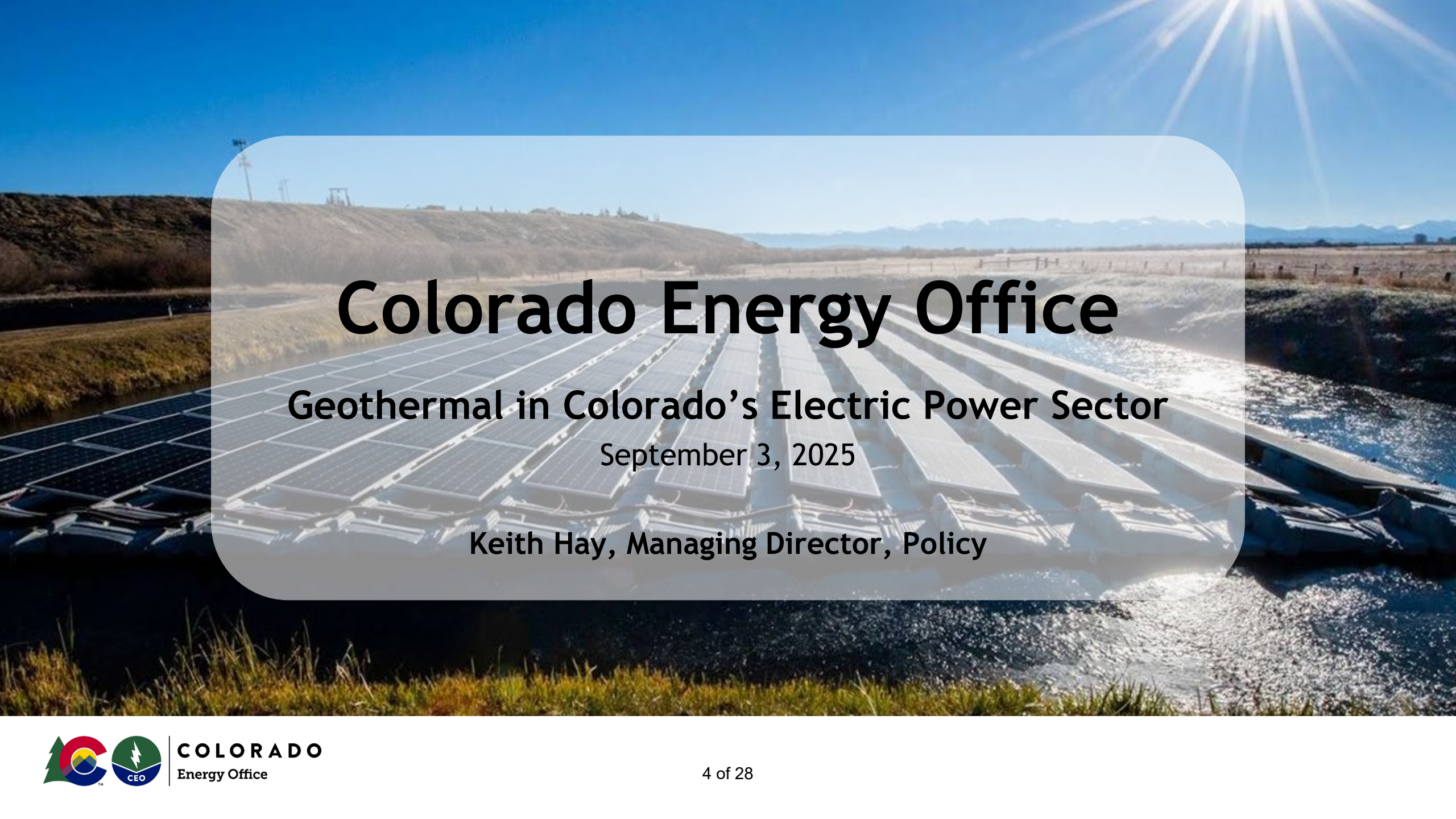
There were no customer comments.

6. Committee Member General Discussion

Alternate Member Carter stated he attended the Advances in Nuclear Fuel Conference and advised the United States Airforce is looking for a micro reactor in Alaska.

7. Adjournment

Chair Danner adjourned the meeting at 10:14 a.m. The next meeting will be on September 3, 2025.



Colorado Energy Office

Geothermal in Colorado's Electric Power Sector

September 3, 2025

Keith Hay, Managing Director, Policy



COLORADO
Energy Office

Mission

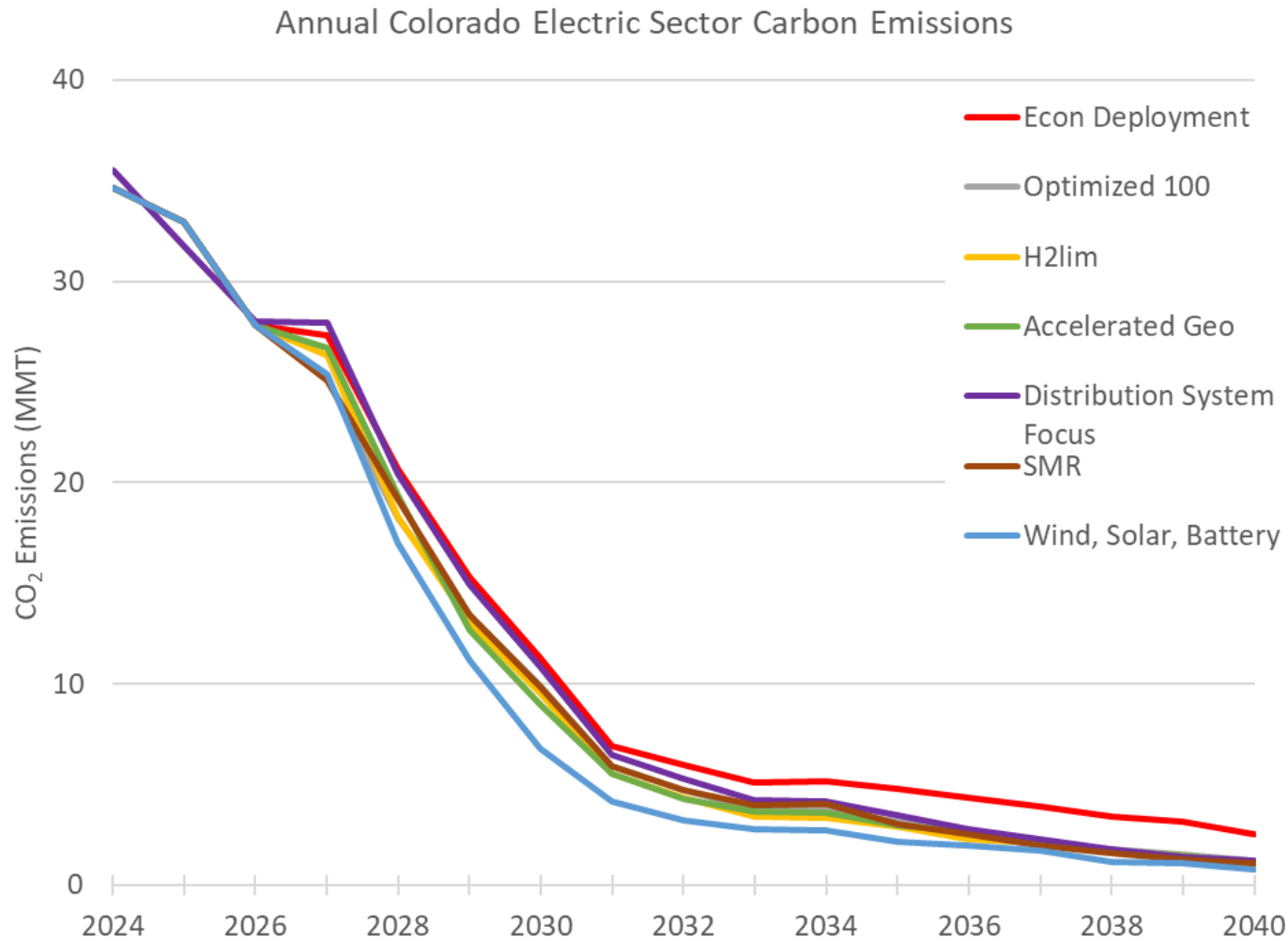
Reduce greenhouse gas emissions and consumer energy costs by advancing clean energy, energy efficiency and zero emission vehicles to benefit all Coloradans.

Vision

A prosperous, clean energy future for Colorado.



Key Takeaways - Many Paths to Deep Emissions Reductions

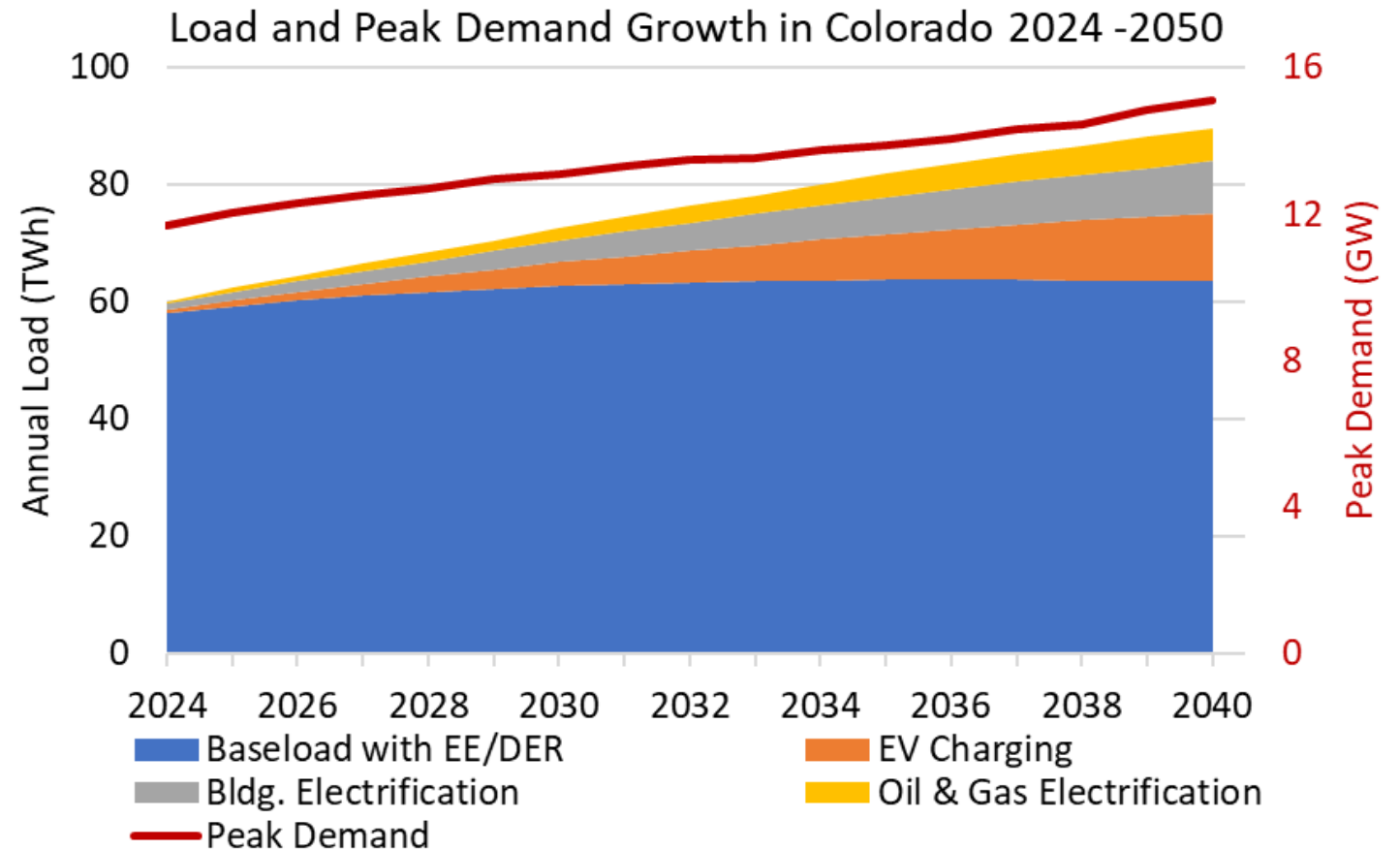


- The Economic Deployment, or business as usual, scenario results in a 94% reduction in GHG emissions by 2040 at no incremental cost.
 - Transitioning to a 100% clean energy grid by 2040 adds approximately \$8.5 Billion (+20%).
- Firm generation remains critical for grid reliability but is expected to run very infrequently, with annual capacity factors of 2% in 2040, running primarily during periods of peak demand.
- Econ Dep scenario entails additions of 5.5 GW wind, 11 GW solar, and 9 GW storage, compared to 2022 levels of 5 GW wind, 2 GW solar, and 0.5 GW of storage.
- A least-cost, carbon-free future requires additions of 11.5 GW wind, 10 GW solar, 7.5 GW storage, and replacement of all fossil fuel resources with 6 GW of green hydrogen generators and 800 MW of geothermal.
- In the least-cost pathway to achieving 100% emissions reduction, clean firm generation is expected to comprise 30% of reliable capacity, with storage providing an additional 40%.



Load Growth

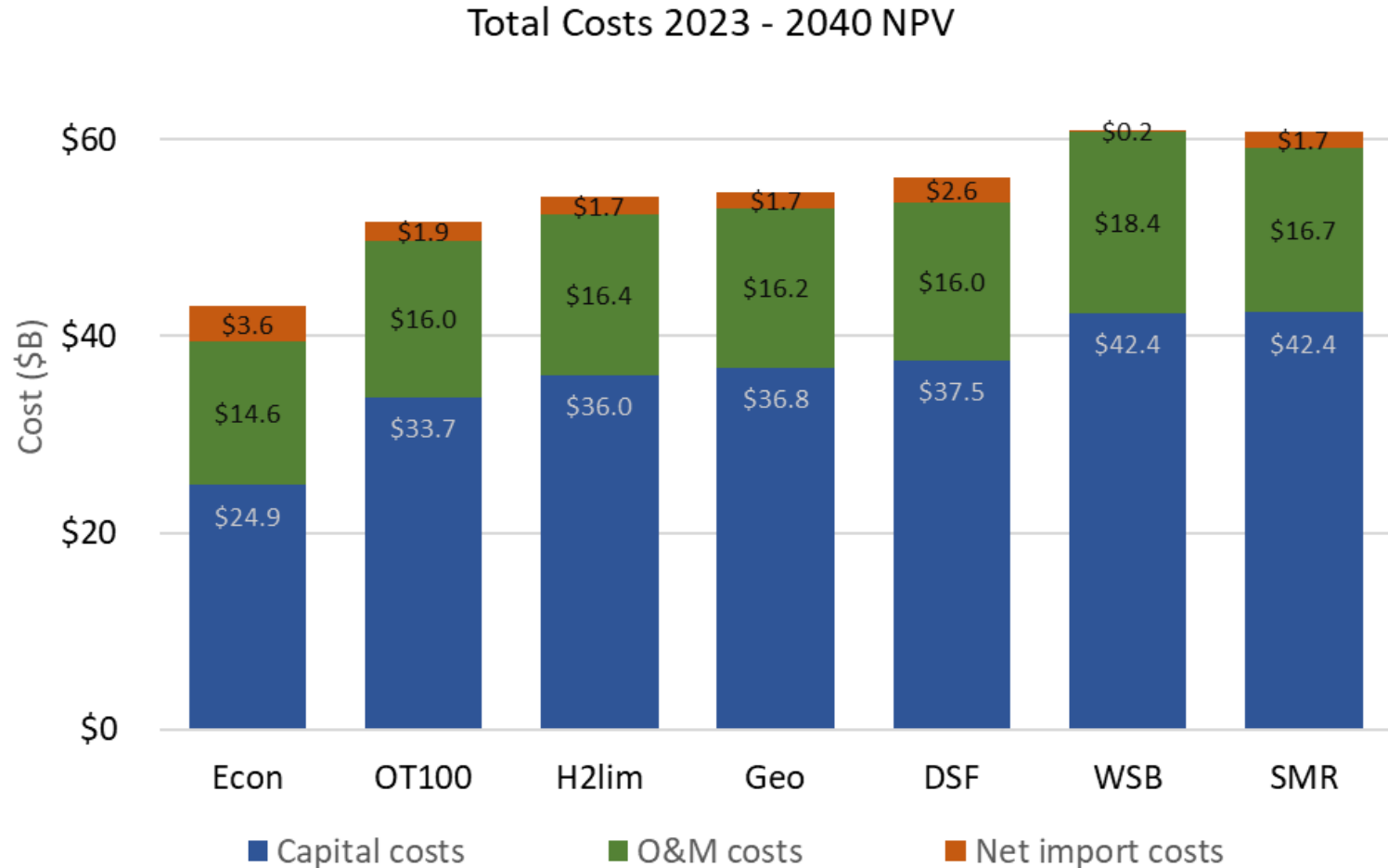
- Load is expected to increase by 50% between 2024 and 2040 (3% annual growth) primarily driven by vehicle electrification and building electrification.
- Energy efficiency and distributed generation help offset increases in consumption, resulting in a net baseload growth of 0.7% annually.
- Peak demand increases 2% annually (red line).
- Electrification of oil and gas/industrial end uses will contribute an increasing amount of load.



Renewables are well suited to provide inexpensive energy to meet increased load growth.
However, firm generation is needed to meet the growing peak demand.

Scenario Costs

- **Economic Deployment:** lowest overall in costs, primarily due to retaining some existing gas capacity and avoiding capital costs from replacing it.
- **Optimized 100:** 20% higher net cost than EconDeploy, but achieves 100% clean in-state electricity without any remaining fossil fuel resources.
- **Hydrogen Limited and Geo:** slightly higher cost than OT100 due to replacement of hydrogen with alternative, higher cost clean firm resources.
- **Distribution Focused:** increased electrification cost and increased peak demand drive higher costs. Potential additional distribution side costs not captured in this model.
- **Wind, Solar, and Battery:** the most expensive scenario due to the very high capacity of renewables and storage required to ensure reliability.





What is geothermal energy?



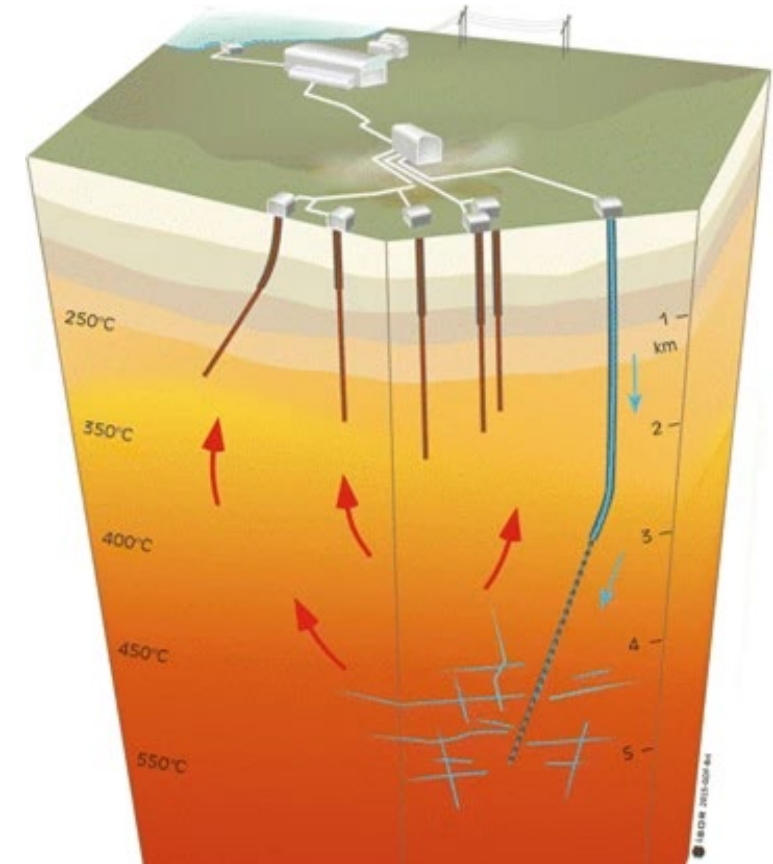


Traditional Geothermal Electricity Production

(above 250-300°F or 121-150°C)



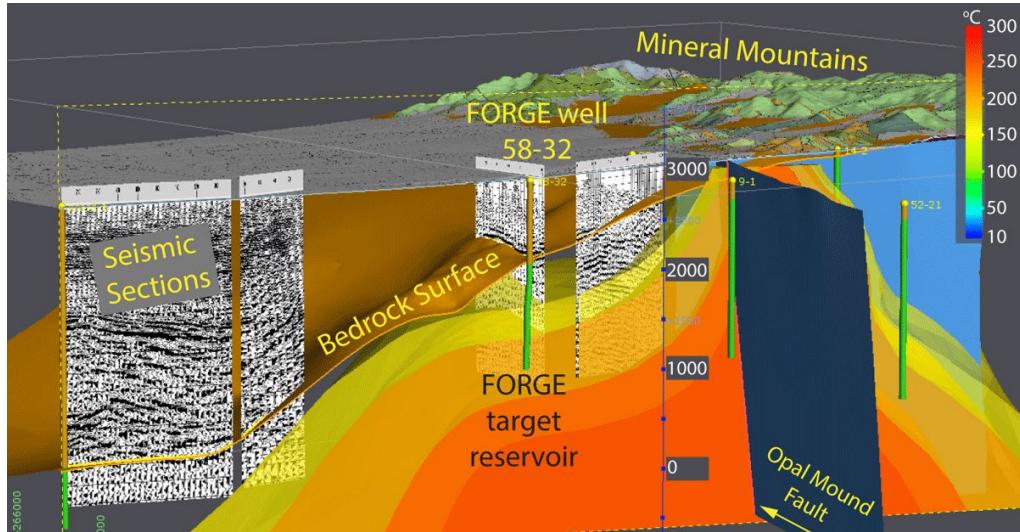
Ormat Steamboat Hills Geothermal Power Plant in Reno, Nevada. Photo by Bryce Carter. October 2023.



Conceptual model of the Reykjanes geothermal field showing the existing conventional geothermal wells (*brown*) and the IDDP-2 well (*blue*) (Friðleifsson et al. [2016](https://geothermal-energy-journal.springeropen.com/articles/10.1186/s40517-017-0075-y/figures/1))
<https://geothermal-energy-journal.springeropen.com/articles/10.1186/s40517-017-0075-y/figures/1>



Enhanced Geothermal Systems

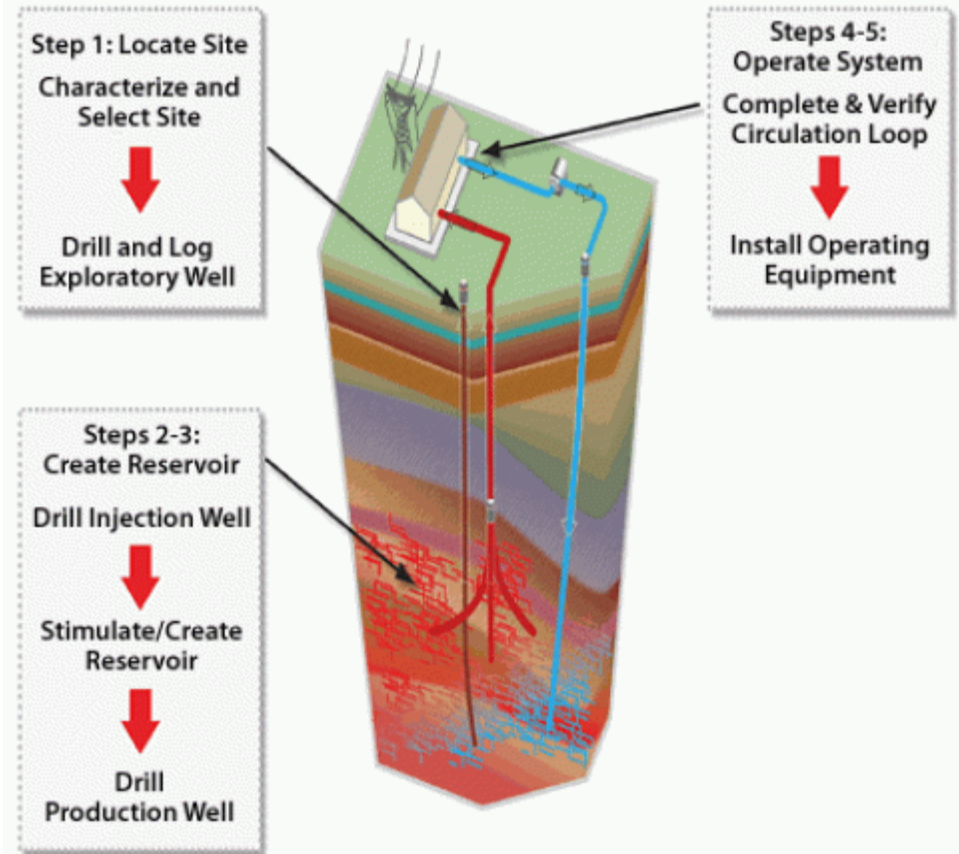


<https://geology.utah.gov/map-pub/survey-notes/gravity-subsurface-forge/>



<http://thedriller.com/articles/91319-a-first-for-geothermal-power>
Gosia Skowron, EGI.

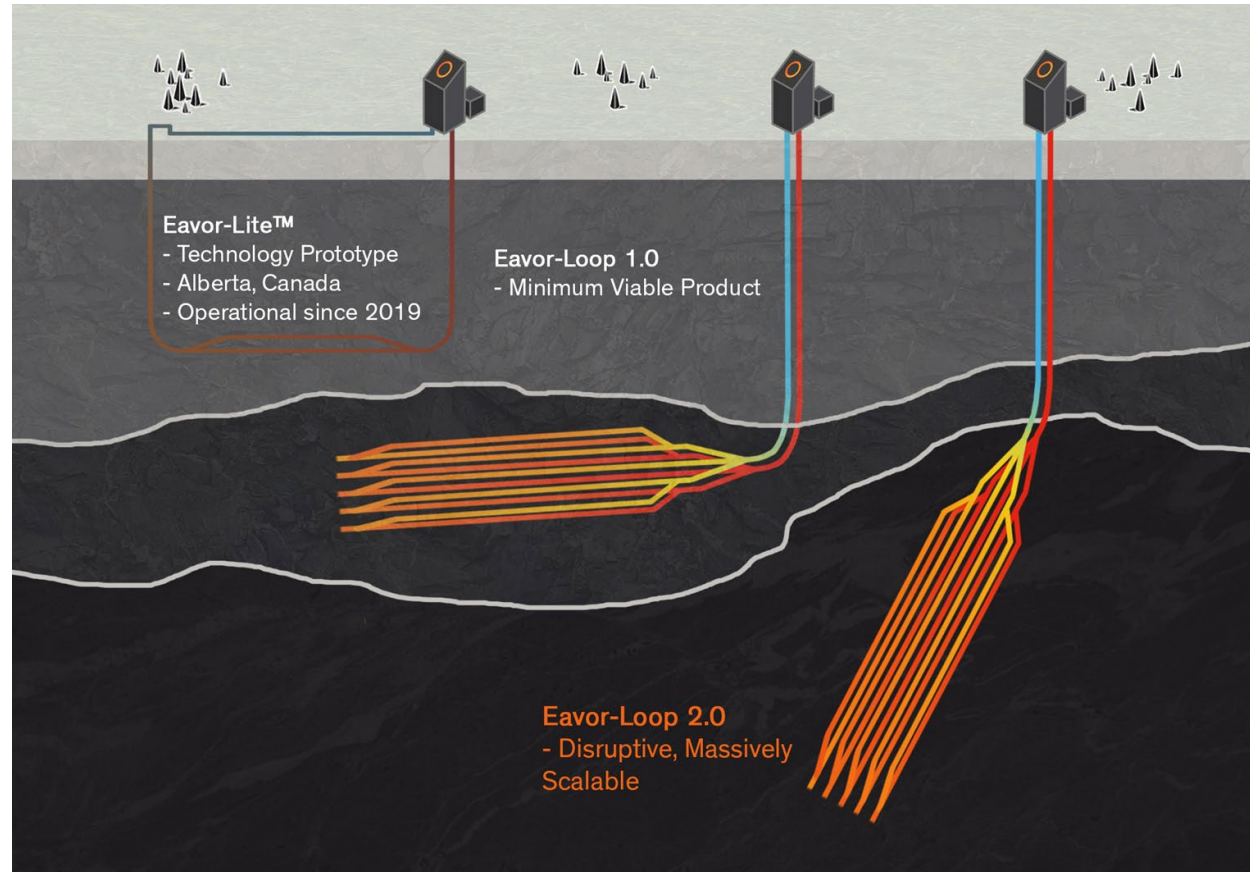
EGS Development Sequence



<https://www.energy.gov/eere/geothermal/enhanced-geothermal-systems-technologies>



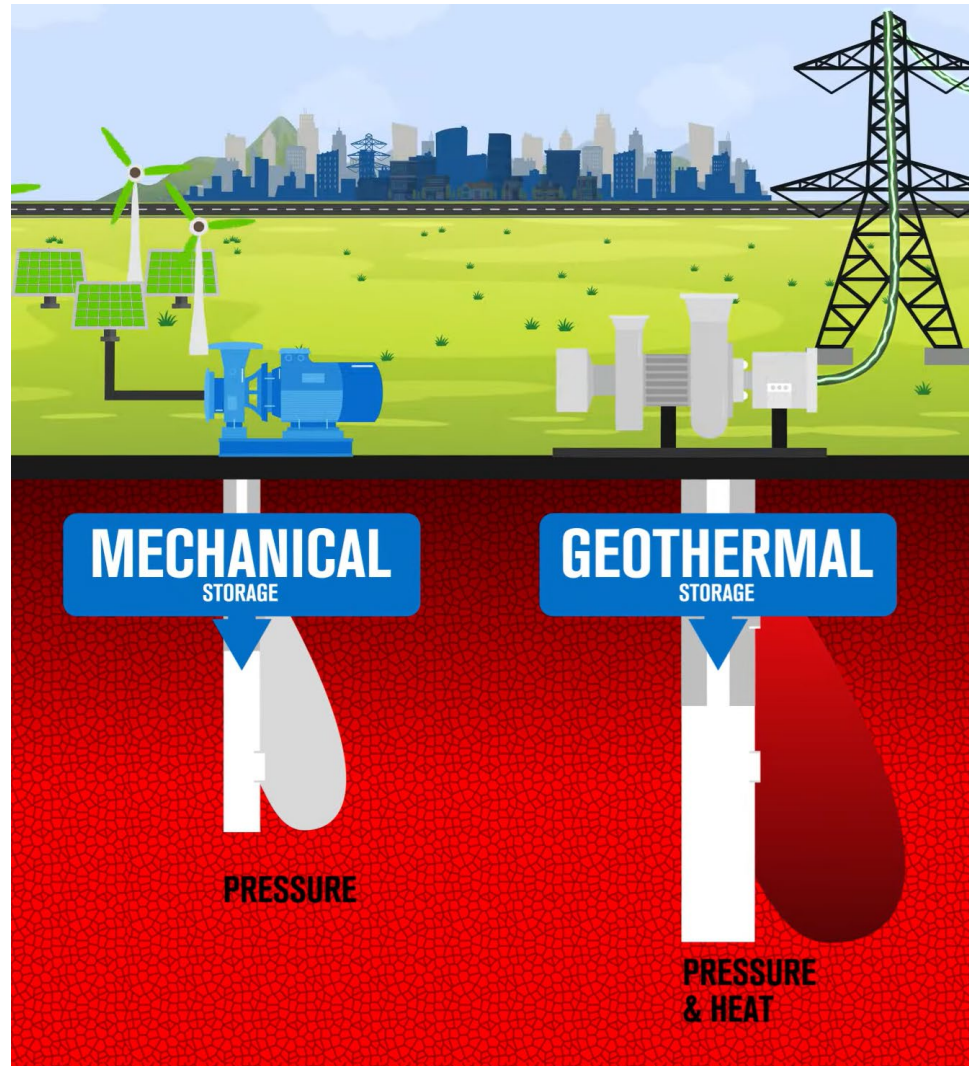
Advanced Geothermal Systems



<https://www.eavor.com/faqs/>



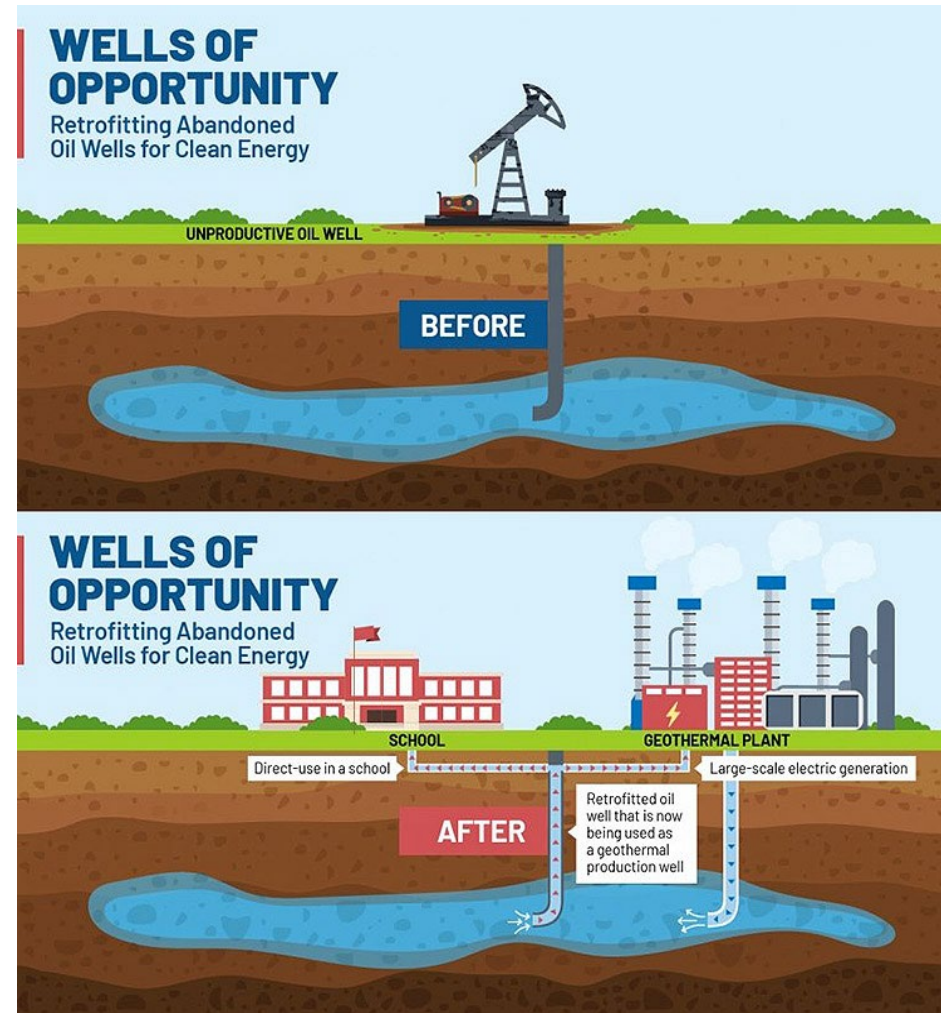
Geothermal Energy Storage Systems



<https://www.sagegeosystems.com/geothermal-energy-storage-solutions/>



Repurposing Oil Wells



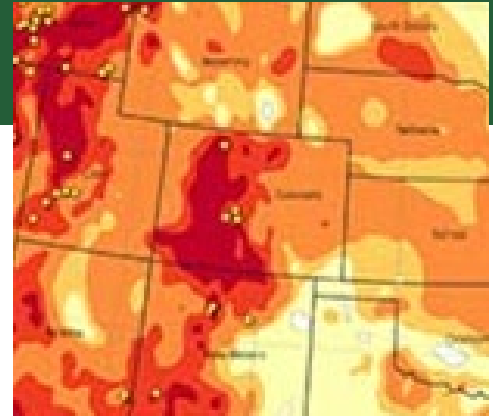
Source: [National Renewable Energy Laboratory](#)



What can
geothermal
energy do
for Colorado?



Deep Geothermal Opportunities

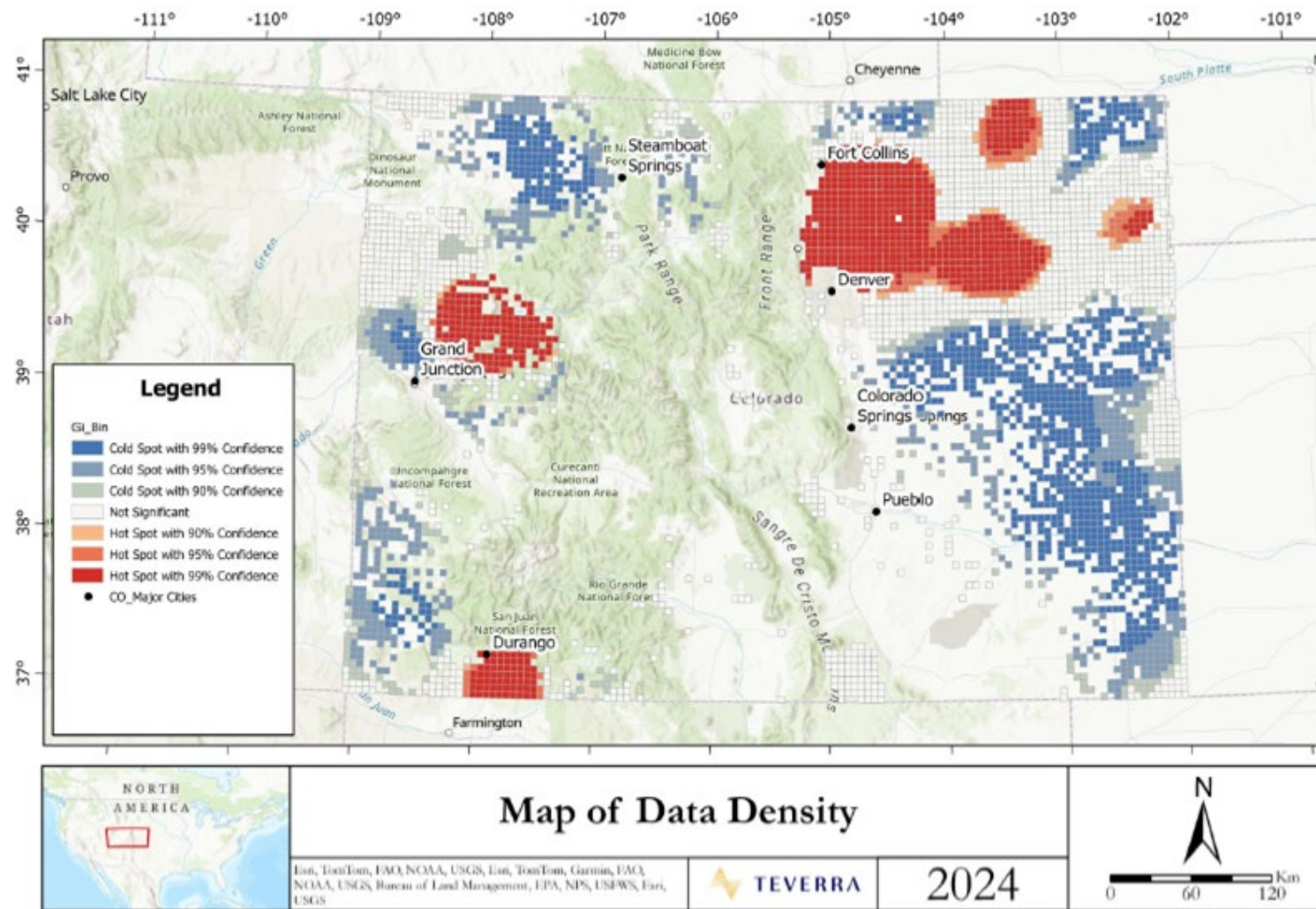


- Colorado has the second largest heat flow anomaly in the U.S., with the potential to produce up to **2 to 8 GW of electricity capacity by 2050** (NREL/Enhanced Geothermal Shot)
- Advancements from the oil and gas industry now allow us to access **high temperature heat deep underground**; with DOE funding, the GLADE project in Colorado has reached 20,000 feet depth
- Colorado will have over several gigawatts of **transmission capacity** open up as coal-fired power plants are retired by 2031



What data do we know?

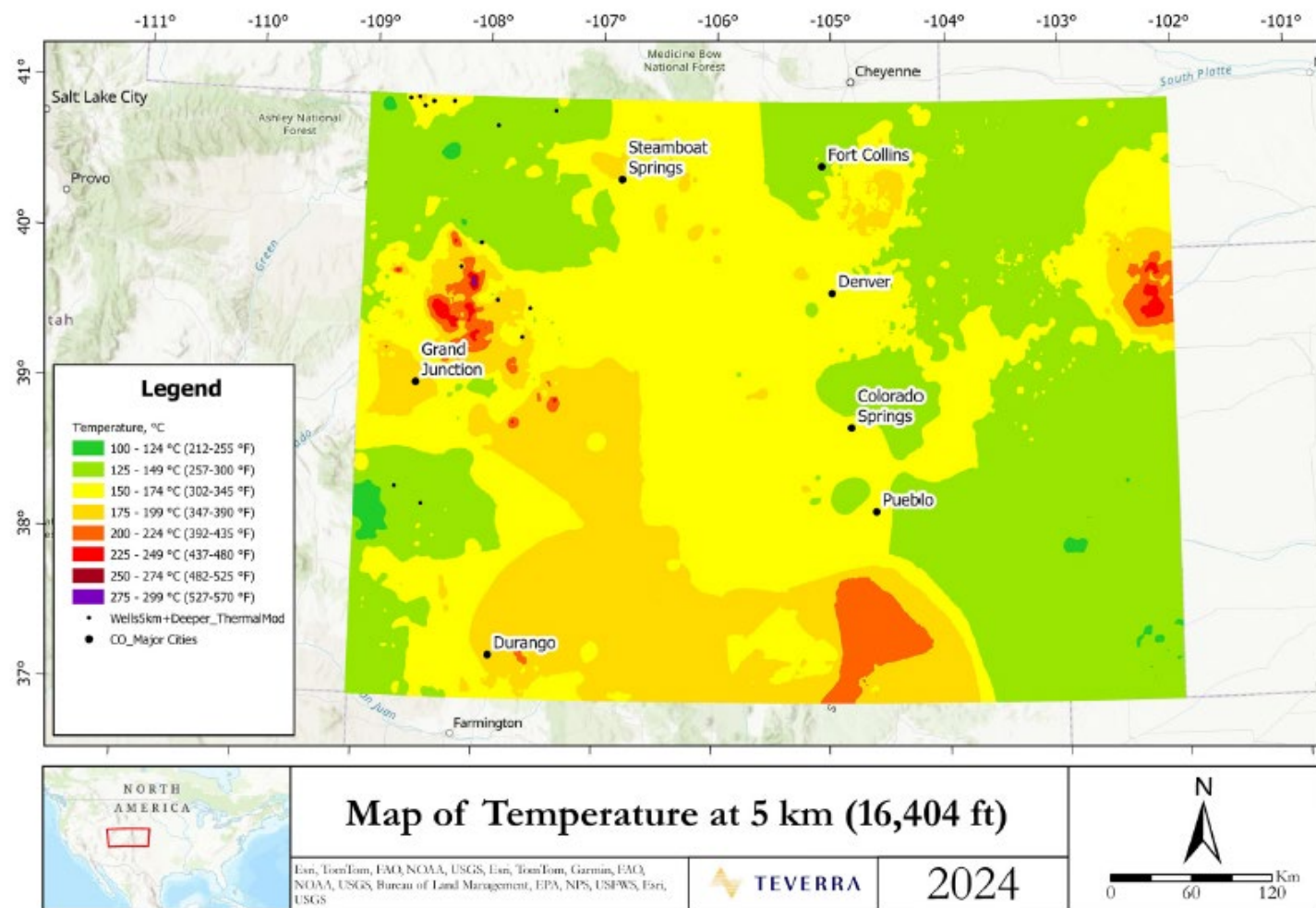
- Data used from decades of test wells; oil and gas development
- Confidence of available heat resource increases with data density
- Modeled thermal gradients can only be confirmed by accessing the resource (test wells)





Modeled heat resources at 16,000 ft (5 km)

- Average oil and gas well in Colorado is 6,804' (2 km)
- Minimum of 150° F to 250° F (80° C to 120° C) is needed to produce electricity
- Most of Colorado has estimated heat potential for electricity at 16,000 ft (5 km)
- DOE GLADE aiming to achieve 20,000 feet depth





Federal and State Geothermal Policies

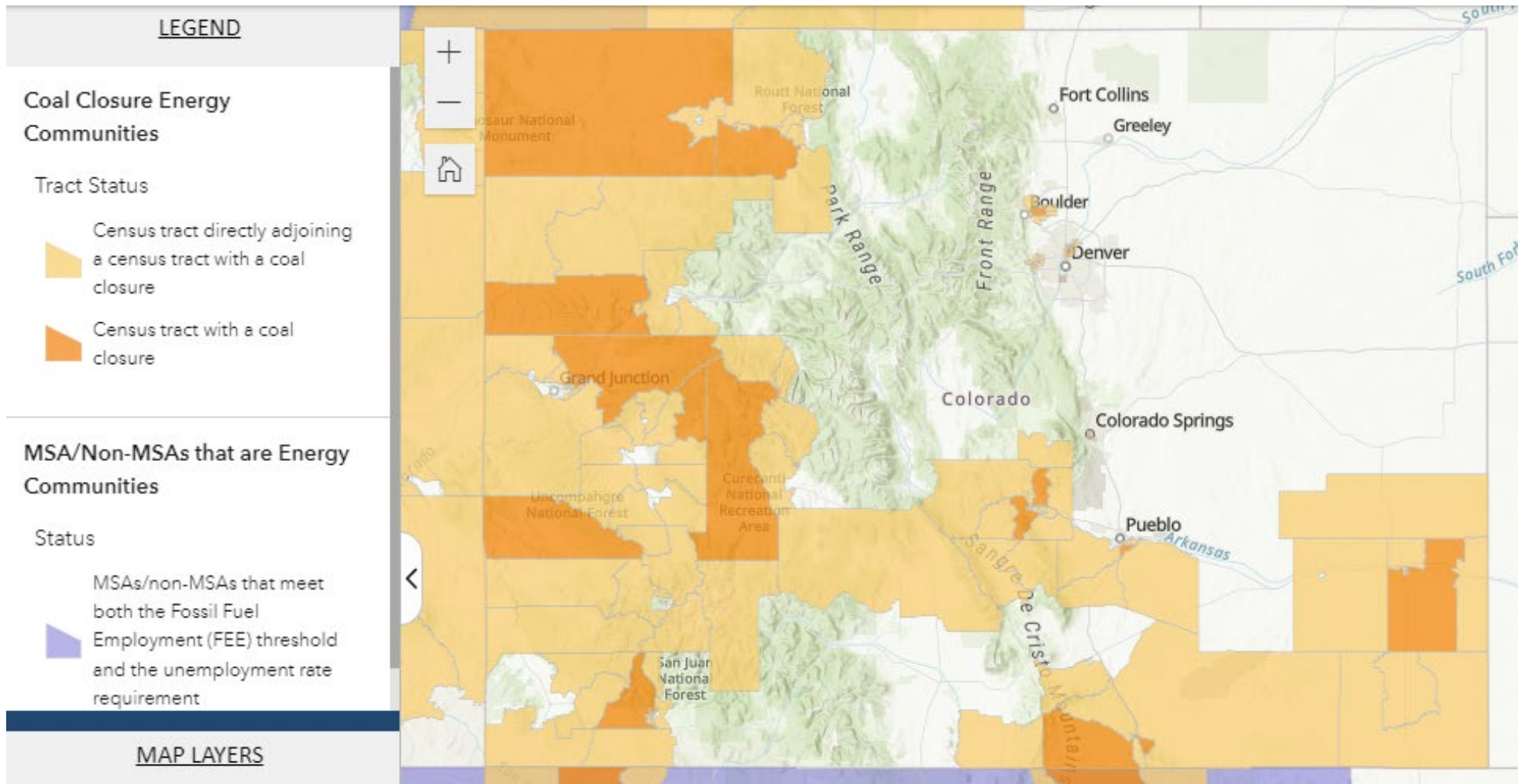


Geothermal Investment Tax Credit

Investment Tax Credit (Commercial):

- **6%** | **Base Rate**
- **30%** | **5x Bonus Rate (6% base x 5)**
 - Projects under 1 MW (approx. 284 tons) qualify
 - Projects over 1 MW (approx. 284 tons) must meet prevailing wage and apprenticeship requirements
- **10%** | **Domestic content bonus**
 - US production of steel/iron; % requirements of components
- **10%** | **Energy Community**
 - Brownfield redevelopment, fossil-fuel focused economy, census tract tied to retiring coal communities

US DOE - Energy Community Tax Credit Bonus



Colorado State Incentives & Policies

In recent years, Colorado has passed several critical bills to help kick-start the geothermal energy market including:

- **HB 19-1261 and SB 23-016:** establish Statewide GHG pollution reduction targets, including net-zero emissions economy-wide by 2050.
- **SB 21-264:** sets GHG emission reduction targets for gas utilities and requires investor-owned gas utilities to file five-year Clean Heat Plans with the PUC beginning in 2023.
- **HB 22-1381:** establishes the CEO Geothermal Energy Grant Program with \$12 million in funding.

HB23-1272: State Geothermal Tax Credits

Geothermal Energy	2024 - 2033
Geothermal Electricity (Investment Tax Credit)	30% - 50% ITC, merit-based \$5 million cap per project
Thermal Energy Network (Investment Tax Credit)	30% - 50% ITC, merit-based \$5 million cap per project / study
Production Tax Credit	\$0.02/kWh



Colorado Springs Utilities
It's how we're all connected

Geothermal Assignment Timeline

September 3, 2025

Geothermal Energy Assignment Scope

1. Is geothermal energy a feasible source of energy in Colorado and for Colorado Springs Utilities? What should Springs Utilities be doing to prepare for geothermal generation in the future?
2. What is the state of the technology? And what are the associated project risks?
3. What is the cost range for different options? Should cost be seen as prohibitive?
4. What are the environmental pros and cons?
5. Are the water constraints in Colorado a prohibitive factor?
6. What is the regulatory/legal environment in Colorado and nationally?

Geothermal Energy Assignment Scope

7. Are there federal grants, private investment opportunities or other funding that Springs Utilities should investigate?
8. What is the permitting environment? Are there any that have been permitted in CO? Are there public land considerations? What is the build out timeframe?
9. What is being done domestically and internationally in areas with similar water limitations and climate and altitude are found?
10. What are the opportunities for partnerships and collaboration?
11. What is recommended for the frequency of UPAC re-examining this topic, including for the EIRP?
12. Based on this assignments' findings, what if any are areas needing further evaluation by UPAC?

Draft Timeline

- **July 2025:** Assignment approved by Utilities Board
- **August 2025:** Mt. Princeton Geothermal, LLC
- **September 2025:** Colorado Energy Office
- **October 2025:** American Public Power Association
- **October 2025:** Working session
- **November 2025:** TBD
- **December 2025:** Begin concluding assignment
- **January 2026:** Utilities Board recommendation



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