

Department of Natural Resources

Energy & Carbon Management Commission (ECMC)

Geothermal Regulatory Study Update



Joint Energy Committee
January 16, 2024



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Agenda

1. Background and Timeline
2. Geothermal Resource Study
3. Geothermal Regulatory Study
4. Study Objectives
5. Stakeholding
6. Topics Covered
7. Recommendations



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Background and Timeline

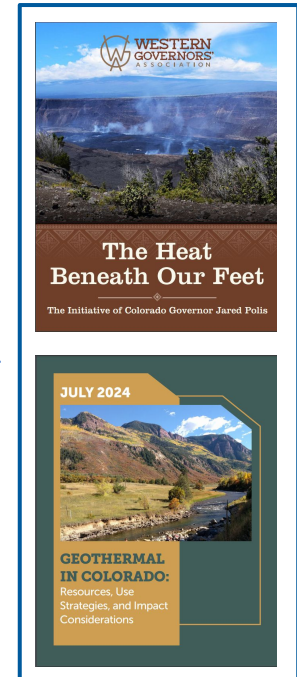
Over the last decade, interest in developing geothermal resources through deep and shallow wells has grown throughout Colorado and the nation

2023

- WGA - The Heat Beneath Our Feet Initiative - Led by Governor Polis
- ECMC CCS Legislative Proposal - Appendix includes considerations for DGO
- SB 23-285
 - Grants ECMC authority over deep geothermal operations in CO
 - DWR retains authority over shallow projects and any consumptive use of water
 - Leverages both ECMC and DWR expertise
 - Initiates two geothermal studies led by ECMC
- ECMC begins development of deep geothermal regulations with stakeholders

2024

- ECMC continues regulation development with extensive input from stakeholders
- 5/2024 - Draft Rules are noticed and Rulemaking process is initiated
- 7/1/2024 - Geothermal Resource Study Released
- 8/12/2024 - Deep Geothermal Rulemaking - Rules adopted
- 12/20/24 - Geothermal Regulatory Report Released



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JULY 2024



GEOTHERMAL IN COLORADO:

Resources, Use
Strategies, and Impact
Considerations

GT Technical Resource Study

A collaboration between the ECMC, Colorado Geological Survey, and Teverra. The Geothermal Resource Study is a comprehensive review of Colorado's geothermal resources, use strategies, and impact considerations

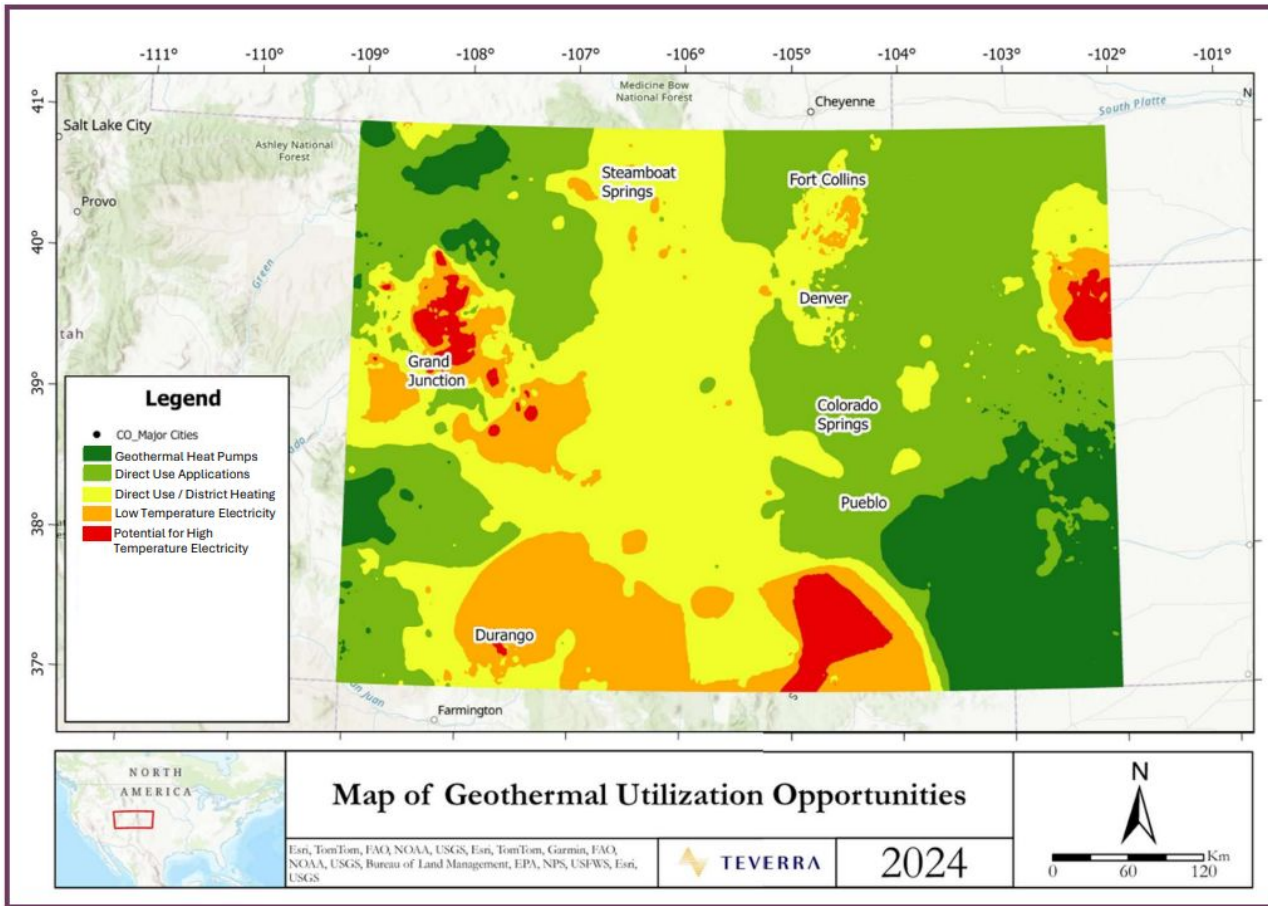
Topics covered in the study

- History of geothermal in Colorado, the geologic setting, and an introduction into current uses in the state
- Evaluation of the geothermal resources of Colorado including the analyses of existing well and temperature data and creation of several resource maps
- Applicable geothermal uses for Colorado and potential future applications based on resource mapping and technology developments
- Impacts and considerations for geothermal development including land use, water considerations, air impact considerations, and more
- Included the release of a large amount of data that was utilized in creating the content within the study



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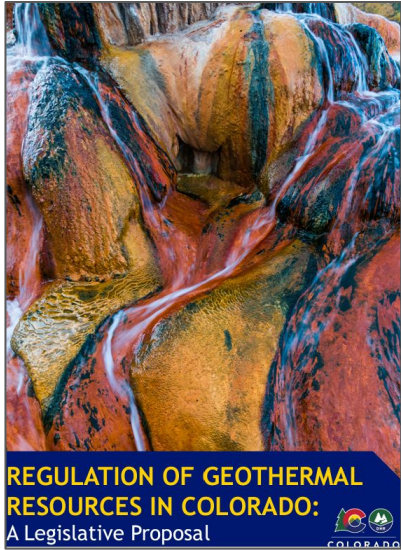




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Geothermal Regulatory Study



- SB23-285 directed the ECMC, in collaboration with DWR, to conduct a study that evaluates the state regulatory structure for geothermal resources and determine whether any changes to law or rules are necessary
- This effort builds upon the work of SB23-285, the technical geothermal report, and ECMC's deep geothermal rulemaking
- Study was released on 12/20/2024

Objectives for the Geothermal Regulatory Study

- ❖ Identify and remove scenarios resulting in dual permitting
- ❖ Simplify and clarify geothermal statutes as necessary
- ❖ Inform future rulemaking efforts
- ❖ Improve inter-agency collaboration and coordination
- ❖ Identify topics requiring future study



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Geothermal Regulatory Study - Stakeholding

- ❖ ECMC has been engaging geothermal stakeholders for nearly two years
 - Rulemaking stakeholding July 2023 - August 2024
 - Stakeholding for the geothermal resource study in March - May 2024
- ❖ Regulatory study stakeholding primarily September - October 2024
 - Received feedback from 30 stakeholder organizations
 - DWR focused on gathering feedback on shallow geothermal systems
 - Responses from local governments, operators, industry associations, state agencies, hot springs resorts, and national experts.

Geothermal Regulatory Study - Topics Covered

- ❖ Dual Permitting: DWR water use and ECMC deep geothermal permits
 - Technical issues with definition of nonconsumptive operations
 - Barriers facing cascading uses for DGO
 - Coproduction would face conflicting water law
 - Unclear jurisdiction over deep geothermal operations in designated basins
- ❖ Clarification of resource ownership and provisions to protect existing projects from being injured by a proposed project

Geothermal Regulatory Study - Topics Covered

- ❖ Shallow geothermal operations
 - Compliance with SB23-285 and ECMC's new jurisdiction
 - Inform the upcoming DWR rulemaking
 - Identify potential improvements in expert oversight of shallow operations, particularly for closed-loop ground heat exchange (GHEX)
- ❖ Programmatic funding and resources
- ❖ Emerging considerations: What topics could require future study?
 - Energy storage wells, CO₂ as a working fluid, and heat distribution pipelines

Geothermal Regulatory Study - Recommendations

- ❖ Energy/Water Approach
 - Deep geothermal operations permitted by the ECMC are exempt from a DWR permit if the operations solely use the nontributary water to extract or utilize heat
 - Facilitates cascading geothermal uses without prohibitive permitting requirements
 - Coproduction would fall under compatible water laws, further encouraging use of existing infrastructure



Geothermal Regulatory Study - Recommendations

- ❖ Clarify definitions and language for:
 - Allocated geothermal resources, to clearly delineate agency authority
 - Depth of project will determine regulatory authority
 - Nontributary groundwater, to clarify ECMC authority for DGOs within designated basins
 - Coproduction statutes, to avoid dual permits from the ECMC
 - Allow for a single permit from the ECMC
 - Reasonable protections against injury, to protect existing operations from newly proposed projects

Geothermal Regulatory Study - Recommendations

- ❖ Clarify language for:
 - ECMC enforcement authority, to create consistency with the OGCA
 - Resource ownership, to clarify interaction between water, surface, and geothermal property rights and to ensure landowner groundwater access
- ❖ Consider options for improved oversight of GHEX construction and licensing
- ❖ Minor changes to funding structure for well and GHEX inspectors



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Conclusions

- ❖ The energy/water approach reduces regulatory barriers by eliminating several duplicative permitting scenarios while maintaining protections for existing operations
- ❖ Clarifying authority and collaboration for DWR and ECMC for shallow and deep operations provides certainty for industry
- ❖ Add appropriate strategies and expertise to the regulation of closed-loop heat pumps to encourage safe and effective operations and expedite the use of these systems in Colorado



Questions?

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