



May 17, 2019

Ms. Mary Neumayr
Director, Council on Environmental Quality
730 Jackson Place, NW
Washington, DC 20503

Dear Director Neumayr,

The Geothermal Resources Council (GRC) is a non-profit professional association for the geothermal industry and community in the USA and abroad. We were founded in 1972 and are headquartered in Davis, California. We have over 1,300 members from around the world and are working to advance our industry by supporting the development of geothermal energy resources through communication of robust research, knowledge and guidance. We congratulate you on your confirmation as CEQ Director and we look forward to working together.

The Policy Committee of the GRC writes to recommend a new Administrative Action to expand, clarify and strengthen the Bureau of Land Management's categorical exclusion from the National Environmental Policy Act (NEPA) for geothermal exploration activities – in particular, for test wells that provide resource confirmation. We are confident that if this recommendation is heeded, the geothermal industry will be able to deploy more megawatts on public lands, creating new jobs and royalty revenues for our local states and counties.

This recommendation is the result of extensive consultation within the industry members of the GRC and the whitepaper findings that result from a review of geothermal permitting conducted over most of the last decade by the National Renewable Energy Laboratory (NREL). While the proposal to establish a CX for certain exploration activities was originally developed for a legislative play in Congress,¹ we believe that Department of Interior is empowered to undertake these activities Administratively.

We thank you for your consideration. I am available to discuss further at your convenience. Please contact me at wpetitt@mygeoenergy.org with any questions.

¹ See most recently S. 1460 and H.R. 4568 from the 115th Congress.

Respectfully,



Dr. Will Pettitt
Executive Director
Geothermal Resources Council

Attachments:

- A. Why does geothermal need permitting relief?
- B. Supporting data from National Renewable Energy Laboratory
- C. Existing policy for geothermal and categorical exclusions
- D. Industry recommendation for reforms

A. Why does geothermal need permitting relief?

90% of the underground geothermal resources that are commercially viable for energy production using today's technologies are located on public lands. BLM manages all subsurface geothermal resource on federal lands, regardless of the federal agency that manages the surface estate (such as the Forest Service). Therefore, almost all geothermal development must conduct NEPA review, and BLM is the true industry gatekeeper for the pace of development.

While geothermal is extremely inexpensive to operate and maintain once a project is underway, our resource discovery is a longer-term effort than other types of energy technologies. Developers must drill exploration holes to determine the true quality and quantity of the underground resource. This means the industry has a disproportionate permitting burden as the "front end" of a project, before a revenue payback is guaranteed. A heavy permitting burden means a slow development cycle, and a slow development cycle means developers pay a lot for financing. At this time, the most expensive line item for a new geothermal power plant is the cost of money.

We kindly request that DOI issue a new rulemaking or memorandum to expand, clarify and strengthen the administrative categorical exclusion (CX) from NEPA, in order to reduce the permitting burden for geothermal exploration and observation (including exploration wells). This action would help unlock new projects and their associated economic impacts, while allowing the hardworking BLM field staff to focus on more pressing and appropriate permitting priorities.

About geothermal exploration

Geothermal exploration wells are distinct from geothermal production wells, which are permitted and constructed differently from exploration wells. Exploration wells are needed for geothermal developers to assess the underground resource for project viability. While developers do what they can to determine the quality of the underground resource through mapping and surface observations, it simply is not possible for developers to characterize the resource without making physical contact with the geothermal fluid deep in the earth.

At this time, most geothermal exploration wells must be permitted with BLM via a detailed Environmental Assessment (EA), even though exploration wells are very limited in scope, are reclaimed quickly after exploration, and result in tiny surface disturbance. These exploration wells also cannot be “repurposed” as production wells under the same permit.² This means developers can’t access the heat resource they need to evaluate whether a commercial project would even be viable without undertaking significant, time-consuming environmental review.

A Categorical Exclusion from NEPA for select types of geothermal exploration wells and other low-impact activities would help the industry tremendously, without undermining environmental stewardship. When developers are able to utilize a CX, they can avoid conducting a full Environmental Assessment and instead performs a CX review, which is far quicker and less costly. A more useable geothermal CX that allows developers to evaluate their energy resource for viability before undertaking extended environmental review could drastically improve timelines and cost profiles for project development. This step would also provide greater parity between geothermal and oil and gas, which is afforded a broad CX for exploration activities, including exploration wells, under Section 390 of the Energy Policy Act of 2005.

² DOI considered this matter in its response to stakeholder questions published in the Final 2007 amendments to the BLM’s Procedures for Managing the NEPA Process, Departmental Manual Part 516. It noted, “Geophysical exploration activities are data collection activities used to gather information that may be used to inform future decision-making regarding oil, gas or geothermal development proposals by providing information on the location of energy resources. It is not a forgone conclusion that the energy resources identified through this data collection will actually be developed.”

B. Supporting data from the National Renewable Energy Laboratory

A comprehensive study of geothermal development and permitting conducted by NREL in 2013 and 2014 yielded quantitative impartial information that corroborates the industry perspective outline above.³ NREL's researchers noted:

"Reducing the overall project time directly attributable to NEPA, whether by reducing the time of individual NEPA processes or reducing the frequency of NEPA analysis for a particular project, can alleviate some of the major barriers to geothermal development. Reducing NEPA timelines directly decreases overall project timelines which indirectly decreases the perceived risk profile—lowering three of the four barriers to geothermal development identified by industry. Lowering these barriers is in line with one of NEPA's stated goals: to "enhance the quality of renewable resources."⁴

NREL also found that the average time frame for an Environmental Assessment is 337 days (10 months), while the average for a categorical exclusion is only 88 days (<3 months).⁵

Table 1: Types of Environmental Reviews

Federal Action Description	Resulting Environmental Review	Approximate Time frames	Comments
Action would not ordinarily result in significant disturbance ¹ to federal lands, resources, or improvements.	Casual Use (CU)	<1 month	A CU does not require any NEPA analysis and usually results from the review of a NOI for geothermal exploration.
Action that has been adequately analyzed under an existing NEPA document(s) and is in conformance with the land use plan.	Determination of NEPA Adequacy (DNA)	1 month	Not all new proposed actions will require new environmental analysis. In some instances an existing EA or EIS may be relied upon in its entirety, and new NEPA analysis is unnecessary.
Action that the agency or Congress has determined does not have a significant effect ¹ on the quality of the human environment ² (individually or cumulatively) and for which neither an EA nor an EIS is required.	Categorical Exclusion (CX)	2 months	A CU does not require any NEPA analysis. A CX can be established administratively through agency rulemaking or legislatively through congressional action.
Action that may significantly impact the environment	Environmental Assessment (EA)	10 months	EAs are conducted to determine whether action would significantly affect the environment. The EA process results in either a Finding of No Significant Impact (FONSI) or the preparation of an Environmental Impact Statement (EIS).
Major federal action that significantly affects the environment.	Environmental Impact Statement (EIS)	25 months	The EIS process requires public participation for all federal agencies.

¹Definition of "effects" is provided in CFR 1508.8

²Definition of "human environment" is provided in CFR 1508.14

6

³ See supporting info from NREL here: <http://www.nrel.gov/docs/fy14osti/62624.pdf>.

⁴ From Geothermal Permitting and NEPA Timelines. Katherine R. Young, Kermit Witherbee, Aaron Levine, Adam Keller, Jeremy Balu, Mitchell Bennett. National Renewable Energy Laboratory, 2013.

⁵ <http://pubs.geothermal-library.org/lib/grc/1033639.pdf>

⁶ Environmental review table from Young, Katherine, Kermit Witherbee, Aaron Levine, Adam Keller, Jeremy Balu, and Mitchell Bennett. GEOTHERMAL PERMITTING AND NEPA TIMELINES. National Renewable Energy Laboratory. June 2014.

C. Existing policy for geothermal and categorical exclusions

NEPA allows federal agencies to establish CXs for federal actions at their discretion if those action do not, “individually or cumulatively have a significant effect on the human environment”.⁷ BLM has rulemakings already on the books that allow CXs for some geothermal exploration activities, but they are limited and vague, and field offices have not been using the authority.

A CX is provided by BLM to geothermal activities in two ways:

1. First, Departmental Manual 516, Section 2, Appendix 1 contains a list of “DOI-wide” categorical exclusions⁸. Among these named activities is:

“(e) Nondestructive data collection, inventory (including field, aerial, and satellite surveying and mapping), study, research, and monitoring activities.”

2. Second, an update to the DOI Departmental Manual 516, which was published in the Federal Register on August 14, 2007, revised the BLM’s procedures for Managing the NEPA Process. Section 11.9 lists Actions Eligible for a Categorical Exclusion.⁹

B. Oil, Gas, and Geothermal Energy.

(1) Issuance of future interest leases under the Mineral Leasing Act for Acquired Lands, where the subject lands are already in production.

(2) Approval of mineral lease adjustments and transfers, including assignments and subleases.

(3) Approval of unitization agreements, communitization agreements, drainage agreements, underground storage agreements, development contracts, or geothermal unit or participating area agreements.

(4) Approval of suspensions of operations, force majeure suspensions, and suspensions of operations and production.

(5) Approval of royalty determinations, such as royalty rate reductions.

(6) Approval of Notices of Intent to conduct geophysical exploration of oil, gas, or geothermal, pursuant to 43 CFR 3150 or 3250, when no temporary or new road construction is proposed.

⁷ 40 CFR 1508.4

⁸ Also found in 43 CFR 46.210.

⁹ <https://www.federalregister.gov/articles/2007/08/14/E7-15746/notice-of-final-action-to-adopt-revisions-to-the-bureau-of-land-managements-procedures-for-managing>

Item 6 on the DOI DM 516 list, “geophysical exploration,” was specified earlier that year in a Final Rule published May 2, 2007 - *Geothermal Resource Leasing and Geothermal Resources Unit Agreements; Final Rule*.¹⁰ This rulemaking was the implementing regulation for the geothermal energy provisions in Sections 221-236 of the Energy Policy Act of 2005.

Further clarification on the applicability of the geothermal CX was issued under a DOI Instruction Memorandum, No. 2009-044, published in December 2008.¹¹

Then a March 24, 2016 Instructional Memorandum, No. 2016-071,¹² clarified restrictions on the CX and was targeted specifically at how Thermal Gradient Wells may be treated under the CX. This IM allowed geothermal operators to drill deeper TGWs than the 500 feet of depth previously allowed. However, with this change, the IM put into place new requirements for blowout prevention equipment and a threshold for maximum temperature at which operators must either stop drilling or obtain a waiver. The IM also restates explicitly that operators are still not allowed to test or touch the geothermal resource itself and sustains the requirement of zero surface disturbance. This means that operators must be able to drive to the location without creating a road or pad and must use tanks to circulate drilling muds because reserve pits are not allowed.

To summarize, between the Departmental-wide CXs and the geothermal-specific ones, the following activities can be conducted with a CX:

- Varied leasing activities and changes in business agreements related to geothermal projects;
- Approval of royalty determinations;
- Nondestructive data collection, including passive surveys and monitoring activities;
- Suspension of geothermal operations; and,
- Drilling of temperature gradient wells deeper than 500 feet, as long as they don’t access the heat resource directly and do not require a road, wellpad, or reserve pit.

The following activities are not currently eligible for a CX:

- Accessing/direct testing of the heat resource directly via an exploration well;
- Construction of temporary or permanent access roads to test drilling sites;
- Construction of temporary or permanent reserve pits at test drilling sites;
- Construction of temporary or permanent well pads;
- Drilling once bottom-hole temperatures exceed a certain level (rule of thumb is 212 degrees F, but BLM officials must decide on case-by-case basis); and,
- Full-scale development of geothermal resource.

¹⁰ https://www.blm.gov/or/programs/minerals/files/geothermal_resources_agreements.pdf

¹¹ <https://www.blm.gov/policy/im-2009-044>

¹² <https://www.blm.gov/policy/im-2016-71>

D. Industry Recommendations for Reforms

We ask BLM to issue a new Instruction Memorandum and/or rulemaking that does two things:

- (1) Clearly restates all the geothermal activities that are already eligible activities for Categorical Exclusions, in order to ensure consistent and predictable application across field offices; and
- (2) Establishes a new classification of well - a Resource Confirmation well - and clarify its eligibility for Categorical Exclusions.

These recommendations are informed by NREL's 2018 finding that "a new well classification or expedited NEPA compliance could potentially reduce permitting and regulatory compliance timelines when compared to the current process."¹³ Resource confirmation wells would be wells with the express and singular purpose of obtaining "sufficient subsurface information that proves with high probability that a resource of a certain magnitude can be developed."¹⁴

As noted above, the current CX prevents developers from accessing the heat resource directly without conducting an Environmental Assessment at a minimum. Without being able to access the resource itself in order to assess the temperature and its chemistry, the developer has limited certainty as to whether this particular site is worth developing. In turn, the upfront cost and risk profile of the project as perceived by outside funding agents and project partners is greater, putting geothermal at a disadvantage to competing energy technologies.

The suggested language below would allow for geothermal operators to create small test wells to take samples that will provide necessary information on the temperatures, fluid chemistry, fluid pressure and geophysical formation underfoot. It reflects Section 3012 of S. 2012, the *Energy Policy and Modernization Act* of the 114th Congress. This bipartisan legislation passed the Senate by voice vote in 2016. This language is also included in S. 1460, the *Energy and Natural Resources Act* of 2017.

Any new IM or rulemaking to amend the previous policy may need to amend or replace the following passage in IM 2016-071, published March 24, 2016.¹⁵

¹³ Young, Kate et al. "Environmental Concerns and Mitigation Associated with Geothermal Resource Confirmation Drilling Activities." National Renewable Energy Laboratory. *GRC Transactions*, Vol. 42, 2018.

¹⁴ Ibid Page 1

¹⁵ <https://www.blm.gov/policy/im-2016-071>

Recommended language for DOI Internal Memorandum or Rulemaking to expand the geothermal categorical exclusion

Policy/Action: For geothermal resources, the Categorical Exclusion includes the following activities which are carried out by the holder of an appropriate lease provided by the Department of Interior. These are in addition to activities previously declared eligible by the BLM.

- (A) Geophysical exploration:** All geophysical exploration activities that do not require drilling, including seismic surveys.
- (B) Geothermal resource confirmation on greenfields and previously undeveloped lands:** On lands that have not been previously developed for geothermal production and for which a site-specific analysis has not been prepared under NEPA, the drilling of a well to confirm the availability of thermal resources that satisfies the following conditions:
- a. The activity causes fewer than 5 acres of soil or vegetation disruption at the location of each geothermal exploration well;
 - b. The activity and not more than an additional 5 acres of soil or vegetation disruption during access or egress to the project site;
 - c. The activity is completed in fewer than 90 days, including the removal of any surface infrastructure from the project site; and,
 - d. The activity site is restored not later than 3 years after the date of completion of the exploration activity, unless the project site is subsequently permitted and developed for commercial power production.

Resource confirmation testing may include the direct testing of geothermal resources. They may not include the production or utilization of geothermal resources.

- (C) Exploration where a site-specific analysis has already been conducted:** If the land leased has already been assessed under a site-specific analysis under the National Environmental Policy Act, the drilling of a well to test or explore for geothermal resources if that activity causes an individual surface disturbance of fewer than 5 acres, and the total surface disturbance on the leased land is not more than 150 acres.
- (D) Exploration where drilling has already occurred:** The drilling of a well to test or explore for geothermal resources when the drilling is planned for an existing location or well pad site at which the drilling has occurred within 5 years before the date of spudding the well.
- (E) Exploration within a developed field:** The drilling of a well to test or explore for geothermal resources in an existing developed field for which:
- a. an approved land use plan or any environmental document prepared under the National Environmental Policy Act of 1969 (42 U.S.C. 17 4321 et seq.) analyzed the drilling as a reasonably foreseeable activity; and,
 - b. the land use plan or environmental document was approved within 10 years before the date of spudding the well.

When the BLM considers using a CX to fulfill the agency's NEPA obligations with respect to any decision the BLM may make regarding any action or approval, the NEPA regulations at 40 CFR 1508.4 require the BLM to evaluate the effect of the proposed action relative to extraordinary circumstances. The extraordinary circumstances that must be considered are applicable throughout the Department of the Interior. If the proposed action may involve one

or more of the extraordinary circumstances, an EA or Environmental Impact Statement must be prepared.

We thank you for your consideration. I am available to discuss further at your convenience. Please contact me at wpettitt@mygeoenergy.org with any questions.

Respectfully,

Dr. Will Pettitt
Executive Director
Geothermal Resources Council