

Geothermal Development and the Use of Categorical Exclusions Under the National Environmental Policy Act of 1969

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Keywords

Regulatory, permitting, NEPA, categorical exclusions, environmental assessments, geothermal

ABSTRACT

The federal environmental review process under the National Environmental Policy Act of 1969 (NEPA) can be complex and time consuming. Currently, a geothermal developer may have to complete the NEPA process multiple times during the development of a geothermal project. One mechanism to reduce the timeframe of the federal environmental review process for activities that do not have a significant environmental impact is the use of Categorical Exclusions (CXs), which can exempt projects from having to complete an Environmental Assessment or Environmental Impact Statement.

This study focuses primarily on the CX process and its applicability to geothermal exploration. In this paper, we:

- Provide generalized background information on CXs, including previous NEPA reports addressing CXs, the process for developing CXs, and the role of extraordinary circumstances;
- Examine the history of the Bureau of Land Management's (BLM) geothermal CXs;
- Compare current CXs for oil, gas, and geothermal energy;
- Describe bills proposing new statutory CXs;
- Examine the possibility of standardizing geothermal CXs across federal agencies; and
- Present analysis from the Geothermal NEPA Database and other sources on the potential for new geothermal exploration CXs.

As part of this study, we reviewed Environmental Assessments (EAs) conducted in response to 20 geothermal exploration drilling permit applications (Geothermal Drilling Permits or Notices of Intents) since the year 2001, the majority of which are from the last 5 years. All 20 EAs reviewed for this study resulted in a

Finding of No Significant Impact (FONSI). While many of these FONSI's involved proponent proposed or federal agency required mitigation, this still suggests it may be appropriate to create or expand an exploration drilling CX for geothermal, which would have a significant impact on reducing geothermal exploration timelines and up-front costs. Ultimately, federal agencies tasked with permitting and completing environmental reviews for geothermal exploration drilling activities and/or legislative representatives are the responsible parties to discuss the merits and implementation of new or revised CXs for geothermal development.

Introduction

The federal environmental review process under the National Environmental Policy Act of 1969 (NEPA) can be a time consuming component of a geothermal project. Currently, a geothermal developer may have to complete the NEPA process during the exploration, well field development, and power production phases of a geothermal project (potentially more than once during a phase). The time and costs associated with the NEPA process can be particularly burdensome during the exploration phase, where the developer is trying to confirm the existence of the geothermal resource to obtain project financing (Speer, et. al). Currently, most exploration drilling projects require the completion of an Environmental Assessment (EA). The use of Categorical Exclusions (CXs) have the ability to shorten timeframes of the environmental review process for activities that do not have a significant environmental impact by exempting the activity from completing an EA or Environmental Impact Statement (EIS). For example, an analysis of the Geothermal NEPA Database revealed the average exploration EA takes 337 days, while the average CX takes only 88 days (Geothermal NEPA Database).

In 2002, the Council on Environmental Quality (CEQ) established a NEPA task force composed of federal agency employees to review NEPA implementation practices and procedures in an attempt to improve and modernize the NEPA process. The task force (1) evaluated the federal agencies' progress in achieving the desired outcomes of the previous CEQ review conducted in 1997 on the NEPA process and (2) examined further opportunities to

improve the process. The task force found that some federal agencies perceived CXs as difficult to develop and revise, resulting in federal agencies continuing to prepare Environmental Assessments (EAs) where a CX was sufficient (Task Force p. 58). The task force concluded that “improving and modernizing categorical exclusions should be addressed through both immediate and long-term actions” (Task Force p. 57). The task forces’ final report included a number of recommendations for improving the CX process, notably proposing that CEQ prepare guidance to clarify and promote consistent practices for the development, documentation, public review, approval, and use of CXs by federal agencies (which was later prepared by the CEQ in 2006).

This study reviews the CX process and its applicability to geothermal development. In this paper, we:

- Provide generalized background information on CXs, including previous NEPA reports addressing CXs, the process for developing CXs, and the role of extraordinary circumstances;
- Examine the history of the Bureau of Land Management’s (BLM) geothermal CXs;
- Compare current CXs for oil, gas, and geothermal energy;
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- Examine the possibility of standardizing geothermal CXs across federal agencies; and
- Present analysis from the Geothermal NEPA Database and other sources on the potential for new geothermal exploration CXs.

It is worth noting that the topics and potential CXs discussed in this study could apply equally to hydrothermal and enhanced geothermal systems (EGS) because there is no distinction between the techniques used during this phase of a geothermal project. The stimulation of an EGS system is not considered within the scope of this study.

Background on Categorical Exclusions

CEQ regulations define a CX as “a category of actions which do not individually or cumulatively have a significant effect on the human environment and which have been found to have no such effect in procedures adopted by a Federal agency in implementation of these regulations (40 CFR § 1507.3)...” (40 CFR § 1508.4). Where a category of actions falls under a categorical exclusion, a federal agency is not required to complete the Environmental Assessment (EA) or Environmental Impact Statement (EIS) process, but may decide to complete an EA anyway under 40 CFR § 1508.9 (40 CFR § 1508.4). In addition, where extraordinary circumstances are present, a categorically excluded action may have to complete an EA or EIS. (The role of extraordinary circumstances is discussed in greater detail below) (40 CFR § 1508.4).

Categorical Exclusions can be lists of specific activities that have been identified by agencies (administrative CXs) that, based on past experience, do not have a significant effect on the environment (40 CFR 1500.4(p) and (40 CFR 1500.5(k)); (CEQ Categorical Exclusion Final Guidance p. 2-3). In addition, the United States Congress can create CXs through legislative action (statutory CXs). CXs are not exemptions or waivers from

the NEPA process, but instead are a type of NEPA-related review aimed at reducing paperwork, delay, and the more resource-intensive review required by an EA or an EIS. The proper use of CXs can allow federal agencies to focus EAs and EISs on proposed actions that have the potential to cause significant environmental effects (CEQ Categorical Exclusion Final Guidance p. 3). We review administrative and statutory CXs in more detail below.

Administrative Categorical Exclusions

Federal agencies may establish new administrative CXs or revise existing administrative CXs where they find that the category of actions is not expected to have significant individual or cumulative environmental effects. In order to develop the justification for a new CX or to revise an existing CX, a federal agency can:

- Examine NEPA reviews for the class of actions to see whether the actions resulted in no significant environmental effects¹;
- Conduct demonstration projects to see whether the class of actions has significant environmental effects;
- Rely on the expertise, experience, and judgment of agency staff or outside experts to see whether the class of actions has significant environmental effects; or
- Review another federal agency’s experience with a CX and the administrative record developed by the other agency when the categorical exclusion was established. (CEQ Categorical Exclusion Final Guidance p. 7-9)

After the federal agency gathers evidence to support the creation of a new or revised CX, the agency should develop detailed findings that demonstrate how the agency made the determination and create an administrative record. The agency can use the administrative record to apply the CX, review the continued viability of the CX, or as a tool for other agencies to use as support to develop a CX (CEQ Categorical Exclusion Final Guidance p. 9).

In order to establish the new or revised CX, the federal agency will have to complete a number of steps often referred to as the “rulemaking process.” CEQ guidance states that after drafting proposed CXs, the federal agency should consult with CEQ and other federal agencies (for coordination), publish the CXs for public comment, and then revise (if necessary) and publish the CXs with CEQ (CEQ Categorical Exclusion Final Guidance p. 10).

Statutory Categorical Exclusions

A statutory CX passed by the United States Congress applies equally to all agencies. Statutory CXs, such as The Energy Policy Act of 2005 (EPAAct) § 390 CX for oil and gas, have the ability to standardize CXs across agencies without each agency having to complete an individual rulemaking process.

In order to create a statutory CX, both the United States Senate and United States House of Representatives must pass the same version of the bill creating the statutory CX. Thereafter, the President of the United States must either sign the bill or take no action on the bill for 10 days while Congress is in session. If the President vetoes the bill, Congress must override the veto by a two-thirds majority in both chambers in order for the bill to become law (Article 1, Section 7 United States Constitution).

The Role of Extraordinary Circumstances in CXs

As mentioned above, the use of administrative CXs may be limited by extraordinary circumstances, under which an action that is categorically excluded may have to complete an EA or EIS due to the potential for significant environmental effects (40 CFR § 1508.4). When a federal agency determines whether to use one of its administrative CXs, the agency must consider the circumstances surrounding the activity to rule out the existence of any extraordinary circumstances that might cause significant environmental effects (CEQ Categorical Exclusion Final Guidance p. 10). Each agency develops a set of extraordinary circumstances to consider when determining whether to categorically exclude a proposed activity.²

Agency Extraordinary Circumstances

When geothermal permit applications are received, the Bureau of Land Management (BLM) conducts an extensive review to see if the proposed activities have a significant impact on a category of extraordinary circumstances. If any of the categories are significantly impacted, the BLM determines whether the proposed activity can be modified to alleviate the extraordinary circumstance. If the developer cannot modify the proposed activity, the BLM requires the completion of an EA or EIS (BLM NEPA Handbook 4.2.2). BLM's extraordinary circumstances list is detailed and includes, among others, specific references to environmentally sensitive areas (i.e. parks and wilderness areas), culturally sensitive areas, highly uncertain or controversial environmental effects, historic properties, endangered species, and direct relationships to other actions with individually insignificant but cumulatively significant environment effects (43 CFR 46.215).

The United States Forest Service (USFS) considers a number of "resource conditions" in determining whether extraordinary circumstances exist. USFS resource conditions include, among others, environmentally sensitive areas (i.e. parks and wilderness areas), culturally sensitive areas, endangered species and habitats, and historic properties (36 CFR 220.6(b)(2)). For the USFS, the resource condition alone does not create an extraordinary circumstance, but a cause-effect relationship between the proposed activity and the resource condition may create an extraordinary circumstance (36 CFR 220.6(b)(2)). For example, the mere presence of a cultural or historic resource in the project area might not result in an extraordinary circumstance, but an impact on the resource likely would.

The Department of Energy (DOE) uses broader terms when determining whether extraordinary circumstances exist. The DOE defines extraordinary circumstances as "unique situations presented by specific proposals, including, but not limited to, scientific controversy about the environmental effects of the proposal; uncertain effects or effects involving unique or unknown risks; and unresolved conflicts concerning alternative uses of available resources" (10 CFR § 1021.410(b)(2)). However, the DOE must consider "integral elements" for classes of actions in Appendix B of Subpart D of 10 CFR 1021 (this includes DOE's CX applicable to geothermal exploration). The DOE uses integral elements similar to how the BLM and USFS use extraordinary circumstances and resource conditions (Personal communication, Casey Strickland). The list of integral elements includes

significant impacts on environmentally sensitive resources, such as cultural and historical properties, federally-listed endangered species or their habitats, floodplains and wetlands, and national parks, monuments, and landmarks (Appendix B of Subpart D of 10 CFR 1021).

Similar to CXs, federal agencies' extraordinary circumstances will be different because each agency creates specific extraordinary circumstances through agency rulemaking based on the agency's specific resource concerns and how they relate to the agency's administrative CXs. Generally, all three of the federal agencies highlighted above take explicit or implicit measures to protect against the use of CXs where the activity has the potential to impact environmentally and culturally sensitive areas and endangered species and habitats. However, each federal agency also has its own unique approach in listing extraordinary circumstances and goes to different lengths to define when the extraordinary circumstance applies.

Of the three agencies, the BLM had the longest and most specific list of extraordinary circumstances. The BLM list of extraordinary circumstances, also explicitly protect against cumulative impacts of related activities and those activities that could establish a precedent for future actions with potentially significant impacts, issues not specifically addressed by the USFS- and DOE-defined extraordinary circumstances.³

In the permit application review process for proposed activities that could be classified under an administrative CX, the BLM conducts an extensive review of the proposed activity for "significant impact" to its resources to see whether an extraordinary circumstance exists and requires the completion of an EA/EIS only if there is both (1) a significant impact and (2) the proposed activity cannot be modified to avoid that impact.

The USFS takes a similar approach to the BLM in that it considers the cause-effect relationship between the proposed activity and the resource condition and applies the extraordinary circumstance, as needed, based on the severity of the relationship between the two.

The DOE approach is similar to that of the BLM and USFS in that the use of a CX for geothermal exploration is not appropriate if the activity has the potential to cause significant impacts on environmentally sensitive resources. The CX may still be applied if the environmentally sensitive resource is present, but the action does not have the potential to cause a significant environmental impact (Appendix B of Subpart D of 10 CFR 1021).

The degree to which extraordinary circumstances apply to geothermal development is highly dependent on the specific location of the project, however impacts on environmentally and culturally sensitive (including Native American) areas, historic or archeological sites, and endangered or threatened species and their habitats are the most likely to give rise to an extraordinary circumstance (citation?).

The Role of Extraordinary Circumstances in EAct § 390 CXs

While administrative CXs are limited by extraordinary circumstances as discussed above, the role of extraordinary circumstances in statutory CXs varies. For example, the EAct § 390 created five categories of CXs applicable to oil and gas projects (discussed in greater detail below). Section 390 makes no specific reference

to extraordinary circumstances, and as such, the BLM and USFS adopted guidance in 2005 stating that EPAAct § 390 CXs would not be subject to any screening for extraordinary circumstances (per *Western Energy Alliance v. Salazar*).

In 2010, the BLM and USFS created new NEPA guidance (BLM Instruction Memorandum No 2010-118 and USFS Letter of June 9, 2010) establishing a screening process to consider extraordinary circumstances when using § 390 CXs. However, in *Western Energy Alliance v. Salazar*, the United States District Court for the District of Wyoming held that the BLM and USFS 2010 NEPA Guidance constituted rulemaking proceedings without notice and comment as required by the Administrative Procedure Act. The court prohibited the BLM and USFS from applying extraordinary circumstances screening to § 390 categorical exclusions (*Western Energy Alliance v. Salazar*). As a result, the BLM withdrew Instruction Memorandum No 2010-118 and the USFS withdrew USFS Letter of June 9, 2010.

To date, the BLM and USFS have not implemented a new rule requiring extraordinary circumstances screening for § 390 CXs.

History of BLM’s Geothermal CXs

Over time, federal agencies modify and update their lists of CXs applicable to geothermal development. This section reviews the history of geothermal CXs for the BLM. We focus our discussion in this section on the BLM because, (1) the BLM manages the largest amount of federal land, (2) the BLM is tasked with administering mineral development on all federal lands, regardless of the surface management agency, and (3) the USFS and DOE do not have a similar history to divulge.

The BLM and portions of the Minerals Management Service (MMS) onshore operations merged in 1982 as a result of Secretarial Order 3087. BLM and MMS had differing CX lists and as a result, the Department of Interior (DOI) combined the BLM and MMS CXs into a single list published in 1983. The final CX list contained approximately 41 discreet CXs applicable to oil, gas, and geothermal energy (Personal communication, Kermit Witherbee).

In 1992, DOI published a new list, which reduced the number of CXs from 41 to 6 for oil and gas and no longer applied to geothermal energy. The removal of geothermal resources from the 1992 CX list was labeled in 2003 as an “administrative error” in internal BLM documents (Personal communication, Kermit Witherbee). In the March 31, 1992, Federal Register, DOI stated the 1992 categorical exclusions differed from the 1983 exclusions in that:

1. A number of CXs were deleted to eliminate redundancy (516 DM 2, Appx. 1).
2. Obsolete entries that were no longer appropriate for the categorical exclusion list were dropped. Those dropped included actions that were to be addressed in the

EISs that BLM routinely prepared in association with resource management plans or in programmatic environmental documents.

3. Several categorical exclusions were revised to remove unnecessary qualifiers or to more clearly specify the activity that was being excluded.
4. A number of new categorical exclusions were added.
 - The order in which the categorical exclusions were presented was changed.

(Federal Register Vol. 57, No. 62).

In 2003, the BLM began discussions to increase the six 1992 CXs to eighteen CXs. All of the CXs were to apply to geothermal energy, when applicable, and three of the CXs were specific to geothermal energy. The proposal for the new CXs lost momentum after the creation of the oil and gas CXs in EPAAct §390 (Personal Communication with Kermit Witherbee). The BLM did not implement rulemaking on any of the proposed CXs applicable to geothermal. As a result, only the six CXs in the 1992 list currently apply to geothermal development.

Comparison of Current Oil, Gas, and Geothermal CXs

This section discusses oil, gas, and geothermal CXs applicable to projects where the lead federal agency is the BLM, USFS, or

Table 1. Oil, Gas, and Geothermal CXs across Federal Agencies – A summary of oil, gas, and geothermal CXs applicable to the Bureau of Land Management (BLM), United States Forest Service (USFS), and United States Department of Energy (DOE).

Activity	BLM		USFS		DOE
	Oil & Gas (O&G)	Geothermal	O&G	Geothermal	Geothermal and O&G
Agency Activities					
Land Use Planning		EIS		EIS	---
Leasing		EA/DNA		EA	---
No new roads		CX ¹		CX ³	CX ⁴
Less than 1 mile of new roads		EA/DNA ¹		CX ³	CX/EA ⁴
Drilling Permits (into the reservoir)					
Exploration wells	CX ²	EA/DNA	CX ²	CX ³ /EA	CX ⁴ /EA
Development wells	CX ²	EA/DNA	CX ²	EA/DNA ⁷	EA
Infill wells	CX ²	EA/DNA	CX ²	EA/DNA ⁷	CX ⁴
Other Activities					
Off-lease pipeline	CX ²	EA/DNA	CX ²	EA/EIS	---
Utilization/Operation	EA/EIS	EA/EIS	CX ⁶	EA/EIS	CX ^{4,5}
Minor maintenance	CX ²	EA/EIS	CX ²	EA/EIS	CX ⁴

¹ DOI Department Manual 516 DM 11 (6)

² EPAAct § 390-& BLM IM 2005-247. The use of these CXs is limited to those situations specifically addressed in EPAAct §390.

³ 36 CFR 220.6(e)(8)

⁴ Appendix B to Subpart D of 10 CFR 1021

⁵ Small facilities only

⁶ 36 CFR 220.6(e)(17) – Surface Use Plan of Operations w/ limitations

⁷Activity permitted by the BLM on USFS-managed lands

DOE. This section begins with an overview of the statutory CXs for oil and gas created in EAct § 390, which are applicable to both the BLM and USFS. Thereafter, this section compares the administrative CXs for oil, gas, and geothermal development specific to the BLM, USFS, and DOE. A summary of the CXs is provided in Table 1.

Energy Policy Act of 2005 § 390 CXs

EAct § 390 CXs were a response to tight natural gas supply and the expanding number of environmental group challenges to oil and gas leasing and drilling on public lands. These factors were having an adverse effect on production, leading to rising natural gas prices during the years leading up to the enactment of EAct § 390 (Oversight Hearing, W. Jackson Coleman). Initially, the CXs were proposed during markup of the Committee on Natural Resources of the U.S. House of Representatives by Representative John Peterson (R-PA) (Oversight Hearing, W. Jackson Coleman). In § 390's original form (109th Congress H.R. 6 § 2055) seven CXs were included that would apply if the activity was conducted for the purpose of exploration or development of a "domestic Federal energy source" and only included activities by the Department of Interior (i.e. proposed activities for which DOI BLM would be the lead agency for the environmental review) (109 H.R. 6 EH version). While three of the CXs initially proposed were specific to oil and gas wells, four others would have applied to geothermal development:

- Geophysical exploration that does not require road building;
- Individual surface disturbances of less than 5 acres;
- Placement of a pipeline in an approved right-of-way corridor; and
- Maintenance of a minor activity, other than any construction or major renovation of a building or facility.

During Conference Committee between the House of Representatives and the Senate, the CXs were limited to those activities conducted under the Mineral Leasing Act and for the purpose of exploration or development of "oil and gas." Additionally, the section was expanded to apply to National Forest System Lands under the Department of Agriculture (Oversight Hearing, W. Jackson Coleman). It is unclear why the CXs were limited to oil and gas.

In its final form, EAct § 390 created five categories of actions that are categorically excluded from completing an EA or EIS to streamline the environmental review process for certain oil and natural gas development on public lands (Oversight Hearing, Mike Pool). As previously discussed, §390 CXs do not currently require extraordinary circumstances review. The §390 CXs include:

- Individual surface disturbances of less than 5 acres so long as the total surface disturbance on the lease is not greater than 150 acres and site-specific analysis in a document prepared pursuant to NEPA has been previously completed;
- Drilling an oil and gas well at a location or well pad site at which drilling has occurred previously within five years prior to the date of spudding the well;
- Drilling an oil or gas well within a developed field for which an approved land use plan or any environmental document

prepared pursuant to NEPA analyzed such drilling as a reasonably foreseeable activity, so long as such plan or document was approved within five years prior to the date of spudding the well;

- Placement of a pipeline in an approved right-of-way corridor, so long as the corridor was approved within five years prior to the date of placement of the pipeline; and
- Maintenance of a minor activity, other than any construction or major renovation or building or facility (EAct § 390).

In a 2009 report by the United States Government Accountability Office (GAO) on the Energy Policy Act of 2005, the GAO noted that from fiscal year 2006 to 2008, EAct §390 CXs were used to approve approximately 6,100 of 22,000 applications for oil and gas drilling permits on federal land and about 800 other actions (e.g. placement of a pipeline, maintenance of a minor activity, as described in the §390 CX list above) (GAO Report).

Comparison of Oil and Gas Administrative CXs to Geothermal Administrative CXs

When comparing oil and gas to geothermal CXs, most major differences exist at the statutory level (through EAct §390) as opposed to the administrative level (Table 1.)

The BLM and the DOE each utilize their own agency-specific list of administrative CXs, which are the same for their evaluation of proposed oil, gas, and geothermal activities.

The USFS does provide one CX applicable only to oil and gas development: a CX for the approval of a Surface Use Plan of Operations for oil and gas exploration and initial development activities, associated with or adjacent to a new oil and gas field, as shown in Table 1. Other Activities: Utilization/Operation). The CX includes the approval of one mile of new road construction or reconstruction, three miles of individual or co-located pipelines or utilities disturbance, and four drill sites (36 CFR 220.6(e)(17)).

Comparison of Geothermal Administrative CXs Among the BLM, USFS, and DOE

Administrative CXs for geothermal vary in type and detail among the BLM, USFS, and DOE. All three agencies provide a CX for geological and/or geophysical exploration, but each uses different language and a different degree of specificity.

The BLM version includes the approval of Notices of Intent to conduct geophysical exploration where no temporary or new road construction is proposed (DOI 516 DM 11.9). The BLM has used this CX for all geophysical activities and thermal gradient holes (TGHs) where the well does not require a new well pad.

The USFS version uses the term "mineral, energy, or geophysical investigation," limits the activities to one year or less, and includes construction of less than 1 mile of "low standard road" or use and minor repair of existing roads (36 CFR 220.6(e)(8)). In addition, the USFS CX provides a list of examples that qualify for the CX, which includes TGHs (36 CFR 220.6(e)(8)).

The DOE version of the CX uses the terms "site characterization" and "environmental monitoring," but lists geological, geophysical, and geochemical surveys within specific activities covered under the CX (Appendix B to Subpart D of 10 CFR 1021). In addition, the DOE includes an extensive list of other

activities not expressly addressed in the BLM and USFS, such as water sampling and mapping⁴ (Appendix B to Subpart D of 10 CFR 1021). The DOE CX is very broad and can be used for various types of exploration drilling, including TGHs, core-holes and other types of exploration wells and potentially the associated land disturbance (Personal Communication Casey Strickland).

The BLM has a number of unique CXs, distinct from the other agencies, due to its role as mineral manager for all federal mineral estates. A list of CXs for administrative actions not applicable to other agencies includes:

- issuance of future interest leases under the Mineral Leasing Act,
- approval of mineral lease adjustments and transfers,
- unitization agreements, communitization agreements, drainage agreements, geothermal unit agreements,
- suspensions of operations, and
- royalty determinations (516 DM 11.9).

The DOE has a number of unique CXs, addressing activities in furtherance of existing projects (also listed in Table 1). The DOE provides a CX for:

- The siting, construction, and operation of new terrestrial infill exploratory and experimental test wells where there are existing operating wells or properly abandoned wells;
- Modification or plugging and abandonment of wells (with certain stipulations);
- Repair, replacement, upgrading, rebuilding, or minor relocation of pipelines within existing rights-of-way;
- Construction and operation of pipeline segments generally less than 20 miles between existing source and receiving facilities in previously disturbed or developed rights-of-way; and
- Workover of existing wells to restore functionality (with certain stipulations). (Appendix B to Subpart D of 10 CFR 1021).

DOE's unique CXs address existing projects, which could be attributed to DOE not having the ability to apply a Determination of NEPA Adequacy (DNA) to these activities. On BLM-managed lands, many of these same activities could potentially be covered under a DNA; if not, BLM may require the completion of an EA.

Proposed Legislation

During the 1st Session of the 112th Congress in 2011, Senators Mike Crapo (R-ID) and James Risch (R-ID) introduced S. 1470, the Exploring for Geothermal Energy on Federal Lands Act. The bill ultimately died in committee, but provides an example of a statutory CX for geothermal exploration. The bill sought to exclude a "geothermal exploration test project" from completing an environmental review in accordance with NEPA on lands leased by the DOI for the development and production of geothermal resources. To qualify as a "geothermal exploration test project" the bill required that the project:

- Is carried out by the lease holder;
- Causes less than one acre of soil or vegetation disruption at the location of each geothermal exploration well and not more than 5 acres during access or egress to the test site;
- Is developed no deeper than 2,500 feet;
- Is less than eight inches in diameter;
- Is developed in a manner that does not require off-road motorized access other than to and from the well site along an identified off-road route for which notice is provided to the Secretary of Interior;
- Is developed without construction of new roads other than upgrading of existing drainage crossings for safety purposes;
- Is developed with the use of rubber-tired digging or drilling equipment vehicles; and
- Is completed in less than 45 days, including removal of any surface instruction from the site and restoration of the site to approximately the condition that existed at the time the project began.

A similar CX could be brought again at the statutory level or created at the administrative level (if a federal agency determined that the above-described exploration project does not cause a significant environmental impact, per CEQ regulations for developing administrative CXs).

Methods for Standardizing CXs Across Federal Agencies

The geothermal industry has suggested an improvement to permitting projects on federal lands would be to standardize CXs for geothermal development across all federal agencies responsible for conducting environmental reviews for activities related to geothermal development. As previously discussed, CXs can be created either administratively by agencies, or statutorily by Congress.

In order for federal agencies to standardize administrative CXs, each agency would have to develop the same CX and complete the rulemaking process separately because federal agencies must each develop their own justification for the new administrative CX. Federal agencies could attempt to complete the rulemaking process (1) concurrently and independently or (2) sequentially and rely on the first agency's justification for the CX when creating its own administrative record through "benchmarking." While federal agencies cannot blindly use another agency's CX, they can apply another federal agency's administrative record (used to develop a CX) as justification for developing their own CX for the same or a similar category of activities (CEQ Categorical Exclusion Final Guidance p. 9). When a federal agency benchmarks a proposed CX based on the same or a similar CX developed by another agency, the agency (and CEQ during consultation) should compare the following criteria in determining whether the CX is appropriate:

- Agency missions;
- Actions implemented to conduct the missions;
- Environmental conditions of the actions; and

- Conditions, including environmental, under which the actions are typically taken (NEPA Task Force Report to the Council on Environmental Quality).

Conversely, a statutory CX passed by the United States Congress applies equally to all agencies included in the statute. Statutory CXs, such as EPA Act § 390, standardize CXs across multiple federal agencies without each agency having to complete an individual rulemaking process. As a result, industry has expressed that the legislative process may be a more effective way to create consistent CXs for geothermal development across multiple federal agencies.

Advantages and Challenges to Standardization Methods

Administrative CX

Advantages

Developing standardized CXs across multiple federal agencies through the administrative process would provide each agency with more control when applying the CX because the CX would be subject to each agency's procedures for CX applications (including the federal agency's extraordinary circumstance review and ability to require an EA even when a CX applies).

Challenges

The process of coordination among all agencies to develop the same administrative CX could be burdensome, difficult, and potentially time consuming.

If each federal agency were to develop the CX concurrently, the agencies would have to coordinate each step of the process, especially the initial drafting and revision after public comments, to make sure the CXs remain consistent. This coordination raises the question and validity of whether a federal agency should or could revise a CX based on public comments received by another federal agency.

Alternatively, if one federal agency created a CX and other federal agencies relied on the administrative record, the federal agencies relying on the administrative record would avoid the initial coordination required to draft the CX. Challenges could still arise when addressing public comments and creating a CX consistent with the initial federal agency. In addition, the process of waiting for a federal agency to complete the rulemaking process before the other federal agencies began the process would be time consuming.

Statutory CX

Advantages

Statutory CXs have the advantage of being consistent across federal agencies to which they apply, without the need for coordination between federal agencies in drafting and revising multiple regulations, as is the case with administrative CXs.

Challenges

Statutory CXs can limit a federal agency's control over the process through restrictions on applying agency procedures (including the federal agency's extraordinary circumstance review

and ability to require an EA where a CX applies). In addition, the legislative process is subject to the prevailing political climate, which could make passing a statutory CX difficult and provide a level of uncertainty in the timeframe for passage and implementation, and potential repeal.

EA/FONSI Review for Potential CXs

As discussed above, federal agencies may establish new CXs or revise existing CXs where they find that the category of actions is not expected to have a significant individual or cumulative environmental effect. A primary method for establishing new CXs is to examine existing NEPA reviews for the class of actions to see whether the actions have significant environmental effects (see footnote 1). NREL staff reviewed EA and related FONSI documents (when available) in the Geothermal NEPA Database (en.openei.org/wiki/NEPA) for activities classified as "exploration" to determine whether the documents could contain evidence to support new or revised CXs for exploration drilling activities (see Appendix 2). The EAs reviewed included a wide range of exploration drilling and related activities, including drilling TGHs, observation wells, and full-sized exploration wells and development of well pads and access roads in furtherance of the drilling activities. Some of the EAs used broad parameters to define the types of wells the developer planned to drill (i.e., 20 well pads that could support either a TGH, observation well, or full-sized well) or well pads that could support a combination of well types (i.e., 15 well pads supporting up to three wells per pad in a combination of "slim wells" up to 14 inches in diameter and a depth of 6,000 ft. and "exploration wells" up to 30 inches in diameter and a depth of 10,000 ft.).

In total, the review covered a sample of 20 exploration drilling EAs, 16 of which included the construction of new access roads to the drill site. All 20 exploration EAs resulted in a FONSI, regardless of the number of well pads, length of access roads, and diameter, depth, and number of wells to be drilled at the site. However, it should be noted that all of the reviewed EAs included agency-imposed mitigation, and most of the EAs included proponent proposed mitigation. Agency-imposed mitigation likely played a role in the EA ending in a FONSI as opposed to the agency finding a significant impact and requiring an EIS.

Of the exploration drilling EAs reviewed, the Newberry Caldera EA, including only TGH/passive seismic monitoring wells and associated land disturbance, but no new road construction, seemed to have the lowest likelihood of significant impact. The EA was conducted at Newberry Caldera Geothermal Area for 12 TGH/passive seismic monitoring wells (dual purpose wells), included relatively shallow wells not intended to reach the geothermal resource (2,500 to 3,500 feet deep), well pads smaller than 100 x 100 ft., required no new road construction, and had a combined total land disturbance of less than 2.5 acres for the entire project.⁵ The project's agency-imposed mitigation was minimal and included activities such as re-applying topsoil excavated from the site, monitoring for noxious weeds, only cutting trees after they are marked by the USFS, having fire extinguishers present at the site, and having an archaeologist present in case inadvertently discovered cultural items or sites are encountered during drilling.

Projects such as Newberry, where the well is not intended to reach the resource, the new disturbance is less than 5 acres, and the drilling will not require new road construction, seem like the most plausible type of geothermal activity to receive a CX. However, limited new road construction or existing road repair should not be ruled out and is currently permissible under a CX from the DOE and USFS. Furthermore, since none of the exploration drilling EAs reviewed for this study resulted in the preparation of an EIS, federal agency personnel may consider reviewing all exploration drilling activities when considering revising or creating new CXs.

Conclusion

CXs can be an effective tool to shorten the environmental review period for certain phases of geothermal development that do not have a significant environmental impact. Previous studies on the federal environmental review process have concluded that CXs are typically under developed and utilized, resulting in time consuming and unnecessary EAs. While a number of CXs applicable to geothermal development are currently in use, the potential for expanding the use of CXs to help streamline the NEPA process exists. Based on NREL’s sample review showing that all 20 exploration drilling EAs reviewed resulted in no significant impact, certain geothermal exploration activities currently reviewed as an EA may be considered for a CX. Ultimately, however, federal agencies tasked with permitting and completing environmental reviews for geothermal exploration drilling activities and/or legislative representatives are the responsible parties to discuss the merits and implementation of new or revised CXs for geothermal development.

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APPENDIX 1: BLM 2003 Proposed Categorical Exclusions

The eighteen proposed CXs included:

1. Actions where BLM is cooperating as a lead or joint lead with another Bureau, Department, or Federal agency on a project or action and the action is a categorical exclusion for that agency.

2. Off-road vehicle travel to drilling or data collection or observation sites.
3. Minor routine or preventative maintenance activities on BLM or permitted facilities and/or resource developments.
4. Issuance of future interest leases under the Mineral Leasing Act of Acquired Lands where the subject lands are already in production.
5. Approval of mineral lease adjustments and transfers, including assignments and subleases.
6. Approval of minor modifications or variances (e.g. less than 5 acres new surface disturbance) in previously approved activities such as drilling and surface use plans.
7. Approval of unitization agreements, communitization agreements, drainage agreements, underground storage agreements, or development contracts.
8. Approval of suspensions of operations, force majeure suspensions, and suspensions of operations and production.
9. Approval of royalty determinations such as royalty rate reductions.
10. Approval of off-lease storage in or on existing facilities.
11. Establishment of terms and conditions in Notices of Intent to conduct geophysical exploration of oil and gas pursuant to 43 CFR 3150 where road construction is not authorized.
12. Approval of an Application for Permit to Drill (APD) or sundry notice in the following circumstances: 1) re-entry or modification of an existing well bore, 2) approval of a new well drilled from an existing well pad, or 3) (a) approval of an in-fill development well where multiple prior environmental assessments (EAs) have found no significant impacts, (b) the well is within the scope of an existing Reasonable Development Scenario (RFD) discussed in an existing NEPA document and (c) the total disturbance of the action is less than 5 acres. All three of sub-criteria (a), (b), and (c) must be met to apply sub-item 3 as a categorical exclusion.
13. Approval for disposal of produced water in accordance with Federal and State regulatory requirements and involve less than 5 acres total disturbance.
14. Approval of non-routine hydraulic fracturing of rock formations to enhance production or injection.
15. Approval of on lease linear facilities (e.g. pipeline) when placed in existing corridors or areas of prior disturbance.
16. Approval of a plan for Geothermal Production when derived from a plan of unitization which has been previously covered by an environmental document.
17. Approval of a plan for injection of geothermal fluids meeting the requirements of the 43 CFR 3200 (Environmental Protection Requirements).
18. Approval of conversion of an unsuccessful geothermal well or an exhausted producer to a water source or an observation well (BLM Internal Documents - Draft – Pre-Briefing Package).

APPENDIX 2: List of Environmental Assessments Reviewed in this Report

- Basalt Canyon Slim Hole and Geothermal Well Exploration Projects (BLM) (USFS) (CA-170-02-15) (2001)
- Deep Rose Geothermal Prospecting Project (BLM) (CA-650-2005-086) (2006)
- Reese River Valley Geothermal Exploration Project (BLM) (NV063-EA06-098) (2006)
- Jersey Valley II Geothermal Exploration Project (BLM) (LLNV-WO1000-20090002-EA) (2008)
- Drum Mountain Temperature Gradient Exploration Project (BLM) (DOI-BLM-UT-W020-2009-028-EA) (2009)
- Drum Mountain Geothermal Exploration Project (BLM) (DOI-BLM-UT-W020-2010-042-EA) (2010)
- Newberry Caldera Geothermal Exploration Project (BLM) (USFS) (DOI-BLM-OR-P000-2010-003-EA) (2010) and (DOE) (DOE-EA-1758) (2010)
- New York Canyon Geothermal Exploration Project (BLM) (DOI-BLM-NV-w010-2010-004-EA) (2010)
- Raft River Geothermal Drilling Project (BLM) (ID-220-2009-EA-3709) (2010)
- San Emidio Geothermal Exploration Project (BLM) (DOI-BLM-NV-W030-2010-006-EA) (2010)
- Soda Lake Geothermal Exploration Project (BLM) (DOI-BLM-NV-C010-2010-0008-EA) (2010)
- Southwest Alaska Regional Geothermal Energy Project (DOE) (EA-1759) (2010)
- Clayton Valley Geothermal Exploration Project (BLM) (DOI-BLM-NV-B020-2011-0026-EA) (2011)
- Dixie Meadows Geothermal Exploration Project (BLM) (DOI-BLM-NV-C010-2011-0516-EA) (2011)
- Leach Hot Springs Geothermal Exploration Project (BLM) (DOI-BLM-NV-W010-2011-0001-EA) (2011)
- Coyote Canyon South Geothermal Exploration Project (BLM) (DOI-BLM-NV-C010-2012-001-EA) (2012)
- Silver Peak Area Geothermal Exploration Project (BLM) (DOI-BLM-NV-B020-0214-EA) (2012)
- Midnight Point and Mahogany Geothermal Exploration Projects (BLM) (DOI-BLM-OR-P040-2011-0021-EA) (2013) and (DOE) (DOE/EA-1925) (2013)

1 According to the 2003 NEPA Task Force Report, most agencies use information from past actions to establish whether a CX is appropriate. Most agencies interviewed stated that an adequate basis for developing or establishing new CXs exists when all of the past actions in the category resulted in a Finding of No Significant Impact (FONSI) (Task Force p. 59).

2 The United States Forest Service's resource conditions it considers when determining whether an extraordinary circumstance exists are listed in 36 CFR § 220.6(b)(2). The Bureau of Land Management's extraordinary circumstances are listed in 43 CFR 46.215.

3 For DOE, cumulative impacts are not addressed as part of extraordinary circumstances/integral elements review, but "connected and cumulative actions" are specifically mentioned in 10 CFR 1021.410(b)(3).

4 BLM often approves water sampling and mapping as casual use activities, which do not even require a CX.

5 While this specific project had the potential for cumulative impacts on the 32,000-acre project site from a timber sales project and multiple vegetation management projects, such cumulative impacts would still be protected through an extraordinary circumstance review, even if a BLM CX was applicable to the TGHs and drill pads.

