

Geothermal National Environmental Policy Act Database on Publicly Available Open Energy Information Website

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Keywords

NEPA database, OpenEI, casual Use, CU, categorical exclusions, CX, CE, determination of NEPA adequacy, DNA, environmental assessment, EA, environmental impact statement, EIS, BLM, USFS

ABSTRACT

The National Renewable Energy Laboratory (NREL) developed the Geothermal National Environmental Policy Act (NEPA) Database as a platform for government agencies and industry to access and maintain information related to geothermal NEPA documents. The data were collected to inform analyses of NEPA timelines, and the collected data were made publically available via this tool in case others might find the data useful. NREL staff and contractors collected documents from agency websites, during visits to the two busiest Bureau of Land Management (BLM) field offices for geothermal development, and through email and phone call requests from other BLM field offices. They then entered the information into the database, hosted by Open Energy Information (<http://en.openei.org/wiki/RAPID/NEPA>). The long-term success of the project will depend on the willingness of federal agencies, industry, and others to populate the database with NEPA and related documents, and to use the data for their own analyses. As the information and capabilities of the database expand, developers and agencies can save time on new NEPA reports by accessing a single location to research related activities, their potential impacts, and previously proposed and imposed mitigation measures. NREL used a wiki platform to allow industry and agencies to maintain the content in the future so that it continues to provide relevant and accurate information to users.

Overview

During the 2013 fiscal year, the National Renewable Energy Laboratory (NREL) developed the Geothermal National Environmental Policy Act (NEPA) Database¹ with funding provided by the U.S. Department of Energy (DOE) Geothermal Technologies

Office (GTO). The information in the database was collected in an effort to conduct analyses on NEPA timelines (Young *et al.*, 2014). The database was then made available to the public on Open Energy Information (OpenEI) in an effort to share the data collection effort with others. OpenEI allows information related to geothermal NEPA documents from all federal agencies to be accessed and maintained in a single location so that others can utilize the data for their own analyses and so that the structure and content can be expanded for other uses. One idea for such an expansion includes collecting information about potentially impacted species and developing queries of potentially impacted resources and associated mitigation measures to allow developers and agencies, when new activities are planned, to look at related activities, their potential impacts, and previously proposed and imposed mitigation measures.

The database contains five types of NEPA-related document collections (three non-NEPA review types and two NEPA review types):

Non-NEPA Reviews:

- Casual Use (CU)
- Categorical Exclusion (CX)
- Determination of NEPA Adequacy (DNA)

NEPA Reviews:

- Environmental Assessment (EA)
- Environmental Impact Statement (EIS)

Types of documents collected include:

- Application files
- Casual Use Documents
- Determination of NEPA Adequacy (DNA) Worksheets
- Categorical Exclusion Approvals
- BLM Serial Register Pages
- Environmental Assessment Reports
- Environmental Impact Statement Reports
- Decision Record Documents
- Findings of No Significant Impact (FONSI) Documents

Efforts were made to collect as many publicly available (non-proprietary) documents and as much metadata as possible from the Internet and Bureau of Land Management (BLM)

offices; however, records for these actions are not consistently catalogued or readily available from federal agencies.

Data Collection

NREL staff and contractors collected the NEPA and associated documents contained in the database from agency websites, during visits to the two busiest BLM field offices for geothermal development (Winnemucca and Carson City field offices in Nevada), and through email and phone call requests to other BLM field offices. All of the environmental review information found during this project has been entered into the database. A list of the sources of information is outlined in Table 1, including the type of data available from each source and comments regarding availability and completeness of the data.

To date, the Geothermal NEPA Database contains 178 document collections, the majority of which are CXs and EAs (Table 2). As of June 2014, the Geothermal NEPA Database does not include

all of the decision records, particularly those related to the EAs and EISs. This is because many of these reports were made available online for public review and comment, but associated documents were not available. The reports and associated metadata could be included in the NEPA database, but we found that the project websites were not often maintained after the public comment period, and, therefore, follow-up information such as decision records and dates were not available.

Database Description and Query Capabilities

The NEPA database allows users to select a specific NEPA review and view the publicly-available documents associated with it (including the permit application, BLM serial register page, environmental analysis, and decision document, when available).

Other notable features of the Geothermal NEPA Database include:

- Potential and identified impacts and mitigation techniques for individual projects, when available through public documents;
- Individual permitting/NEPA records linked to their respective geothermal leases;
- Ability to select and download NEPA data in an Excel spreadsheet; and
- Query capability for each geothermal project to view all of the NEPA analyses conducted, type of project (e.g., exploration, drilling, and power plant development), and specific exploration and development technologies (Table 3).

The Geothermal NEPA Database uses a form to allow users to populate text boxes and dropdown menus with detailed information specific to a set of documents related to a NEPA analysis. These fields were developed to catalogue metadata about each NEPA document. The fields include information related to the federal agencies participating in the NEPA review, the developer, environmental consultants, project location, and other information pertaining to the NEPA analysis.

These fields allow users to query data to provide aggregated information on specific topics, such as the type of NEPA analysis typically required for a technique or development phase, or the

Table 1. Sources of Information for Collection of the NEPA-Related Documents in the NEPA Database

Source	Type of Data	Comments on Available Data
Internet Search	EA and EIS reports	Some EA and EIS reports were available via the internet, largely because they were <i>temporarily</i> being made available for public comment
BLM eNEPA Database https://www.blm.gov/epl-front-office/eplanning/nepa/nepa_register.do	CX and DNA Worksheets, EA and EIS reports for BLM projects	Records date from 2011; contains links to CX, DNA, EA, and EIS documents; not complete for all offices
BLM LR2000 http://www.blm.gov/lr2000/	BLM serial register pages with dates	BLM serial register pages (Case records for transaction records of leases, Rights-of-Way, Notice of Intent for exploration); records date from 1970s
Individual BLM Field Office Websites	EA and EIS reports open for public comment for BLM projects	NEPA documents that are <i>temporarily</i> available. Some offices' records date back to 2008; not complete for all offices, must know that documents exist, offices do not maintain a list of geothermal projects
Field Office Paper Files	BLM reports, applications, FONSI, decisions	Geothermal project files, records date from 1980s, most complete source, document numbers are required for request
DOE NEPA Database http://energy.gov/nepa/nepa-documents	Reports, FONSI, decisions, for DOE projects	Reported to have a complete set of data for DOE-led NEPA analyses from 2008 to the present

Table 2. Summary of NEPA-Related Documents Collected in the NEPA Database in 2013

Type of Document Collection	# of Database Entries	Permit Applications ¹	Reports	FONSI	Decisions
Casual Use	26	18	19	NA	20
Determinations of NEPA Adequacy	30	1	27	NA	27
Categorical Exclusions	53	17	13 (not common)	NA	53
Environmental Assessments	61	2	50	39	17
Environmental Impact Statements	6	0	5	NA	4
TOTALS	178	38	114	39	70

¹Note that we expect the number of permit applications collected in our database to be low (compared to the collection of other documents), because many of these are proprietary, and are therefore not included in this database. Only publically available permit applications were included in the database.

Table 3. Example of NEPA Database Query for New York Canyon Geothermal Area. (The table lists all NEPA-related analyses cataloged in the database, including the analysis type, applicant, lead agency, activities, and related dates.)

Document #	Analysis Type	Applicant	Application Date	Decision Date	Lead Agency	Development Phase(s)	Techniques
LLNV-WO1000-2009-0034-CX	CX	TGP Dixie Development Company, LLC	17 June 2009	16 July 2009	BLM	Exploration	2-M Probe Survey Ground Magnetics
NVN-087791	CU	TGP Dixie Development Company	23 June 2009	21 July 2009	BLM	Exploration	Magnetotellurics
NVN-087811	CU	TGP Dixie Development Co	30 June 2009	21 July 2009	BLM	Exploration	Magnetotellurics
NVN-087812	CU	TGP Dixie Development Co	30 June 2009	21 July 2009	BLM	Exploration	Electrical Techniques
DOI-BLM-NV-W010-2010-0004-EA	EA	Terra-Gen Power LLC	23 November 2009	15 October 2010	BLM	Exploration	Well Testing Techniques Exploration Drilling
DOI-BLM-NV-W010-2012-0005-EA	EA	Terra-Gen Power LLC	30 May 2011	3 June 2013	BLM	Power Plant Well Field Transmission	Development Drilling Downhole Techniques

Table 4. Queries Available on OpenEI

Query	Potential Uses
Technique	Users can look at the type of analysis typically needed for a given activity (e.g. seismic survey, drilling) and review previous timeframes and mitigation measures typically imposed.
Development Phase	Users can look at the type of analysis typically needed for a given development phase (e.g., exploration, well field, power plant) and review previous timeframes and mitigation measures typically imposed.
Field Office	Users can review the analysis conducted at a field office and get a sense of the potential impacts and mitigation prescribed.
NEPA Analysis Type	Users can look at timeframes, techniques, and other circumstances of NEPA analyses of a given type (e.g., CX). This query can help to target areas where efficiencies could be increased.
Document Lists	Users can see and access, at a glance, all NEPA-related documents available on OpenEI.
Geothermal Area	Users can see all NEPA analyses that have been conducted at a specific location, understanding mitigation measures and potential application of future tiered NEPA analyses such as DNAs.
Resource	Users can look at mitigation measures proposed and imposed on previous projects for a particular resource (e.g., Migratory Birds). This query may lead to greater consistency in mitigating impacts, as well as reduced timeframes by not needing to re-invent mitigation measures for each project.

NEPA analysis that has been conducted in a specific location. The queries listed in Table 4 have been developed and are readily available for viewing or download on OpenEI. Users can write additional queries to tailor the data to their specific needs.

Conclusion

The files and metadata in the database were collected to inform analyses of NEPA timelines, and the collected data were made publically available via this tool in case others might find the data useful. Future growth of the Geothermal NEPA Database will largely depend on federal agencies' and private industry's

adoption of the tool and uploading of NEPA documents to the database. NREL built the Geothermal NEPA Database with the potential for expansion to other renewable technologies and bulk transmission, which would allow for a large and diverse group of stakeholders to use the tool and for a more holistic view of a project's environmental review process. For example, users would be able to query all EAs related to a geothermal power project, including transmission.

Currently, the database presents an opportunity for industry to share knowledge and understanding of:

- The level of NEPA review required for various phases and types of development;
- The resource conditions and potential impacts that exist in specific regions; and
- How industry can mitigate potential environmental harm.

The database has the potential to expand its information and capabilities to include, for example, descriptions of environmental, cultural, and social resources that could be impacted by projects and queries of potentially impacted resources and associated mitigation measures. This expansion would allow developers and agencies, when new activities are planned, to look at related activities, their potential impacts, and previously proposed and imposed mitigation measures. Making these data available can help to save time developing new NEPA reports and potentially in providing consistency across jurisdictions in mitigating potential impacts.

Acknowledgments

This work was supported by the U.S. Department of Energy under Contract No. DE-AC36-08-GO28308 with the National

Renewable Energy Laboratory. It was conducted with funding provided by the Assistant Secretary for Energy Efficiency and Renewable Energy, Geothermal Technologies Program, of the U.S. Department of Energy.

The authors wish to thank Jim Vezina, Jon Weers, Nick Langle, Debbie Brodt-Giles, and the OpenEI development team for their efforts in creating a framework for this complex dataset. In addition, we want to express our gratitude to Andrew Gentile and his team at Environmental Management and Planning Solutions, Inc. (EMPSi), Kyle Snyder at Ormat Technologies, Inc., Tania Tries at Environmental Panorama, and the BLM staff who helped with the collection of documents and data for the Geothermal NEPA

Database. In addition, we are grateful to all our reviewers for their reviews, comments, and suggestions, as well as all the experts who provided input to this project. We also thank Kendra Palmer for her technical review of this paper—all errors and omissions are the responsibility of the authors.

References

Young, K.R., K. Witherbee, A. Levine, A. Keller, J. Balu, and M. Bennett, 2014. "Geothermal Permitting and NEPA Timelines." *GRC Transactions*.

¹ <http://en.openei.org/wiki/RAPID/NEPA>