Regulatory and Permitting Information Desktop (RAPID) Toolkit

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Keywords

Regulatory, regulatory roadmap, RAPID, permitting, toolkit, NEPA database, permitting atlas, library, best practices, BLM, NEPA

ABSTRACT

The Regulatory and Permitting Information Desktop (RAPID) Toolkit combines the former Geothermal Regulatory Roadmap, National Environmental Policy Act (NEPA) Database, and other resources into a Web-based tool that gives the regulatory and utility-scale geothermal developer communities rapid and easy access to permitting information. RAPID currently comprises five tools—Permitting Atlas, Regulatory Roadmap, Resource Library, NEPA Database, and Best Practices. A beta release of an additional tool, the Permitting Wizard, is scheduled for late 2014. Because of the huge amount of information involved, RAPID was developed in a wiki platform to allow industry and regulatory agencies to maintain the content in the future so that it continues to provide relevant and accurate information to users. In 2014, the content was expanded to include regulatory requirements for utility-scale solar and bulk transmission development projects. Going forward, development of the RAPID Toolkit will focus on expanding the capabilities of current tools, developing additional tools, including additional technologies, and continuing to increase stakeholder involvement.

History and Background

On March 22nd, 2012, President Obama signed an Executive Order, "Improving Performance of Federal Permitting and Review of Infrastructure Projects." Since that time, there have been a number of related Presidential Memorandums and other documents developed related to improving permitting performance (See "Directives From the President" http://en.openei.org/wiki/RAPID/About#top). Related to that policy effort, the DOE Geothermal Technology Office (GTO) initiated a Regulatory Roadmapping Effort to streamline the permitting process, and to help reduce project risk by reducing delays and cost while ensuring environmental protection and mitigation. In 2011, GTO had received feedback from its Blue Ribbon Panel citing permitting to be one of the biggest barriers to geothermal development.

Efforts to collect permitting information are not new. Many efforts have been made to collect information for a particular state (e.g. California Energy Commission [Blaydes 2007], Nevada Geothermal Permitting Guide [Battocletti, 2005]) or for a particular topic (e.g. Leasing GeothermalBiz [Battocletti 2005], Drilling Waste Management [Argonne National Laboratory]). In 2010, GTO funded an initial effort to collect all permitting requirements for development of geothermal power projects. In 2011, the information was put online into the Geothermal Developers' Permitting Checklist. The Checklist resided as a static website, giving high-level overviews of permitting information in western states. The effort was focused on research of publicly available information, with very little input from industry and agencies.

A more detailed effort was initiated in 2012, and the Permitting Checklist became what is now known as the Regulatory Roadmap. Detailed flowcharts modeled after those found for oil and gas in Canada (Erlandson 2004; Erlandson and Sloan 2002) were developed for each federal and state regulation being covered (initially in eight western states, Figure 1). Flowcharts and supporting narratives were reviewed and reworked through close collaboration with regulatory agency personnel and outside legal counsel. Meetings were held in each state with representatives from regulatory agencies, industry, consultancies, and legal firms to collectively review the entire permitting process. After corrections were made to the Roadmap content, a second meeting was held in each state (for states with previous geothermal development) to identify potential overlaps and bottlenecks in the permitting process. Best practices, such as the development of permitting application checklists, were also identified. A list of these concerns and best practices were presented at the Geothermal Regulatory Roadmap meeting during the 2012 Geothermal Resource Council/Geothermal Energy Association joint meeting and tradeshow (Young and Witherbee 2012).

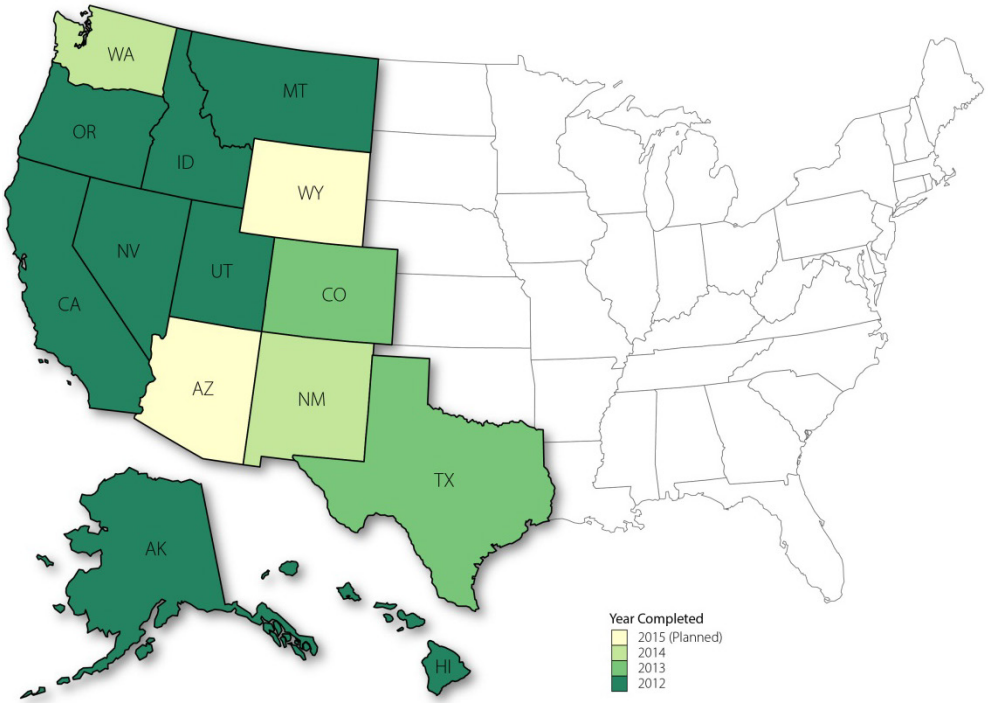

Figure 1. Map of geothermal coverage of the RAPID Toolkit. Colors indicate the year of completion. States completed in 2012 include, Alaska, Hawaii, California, Nevada, Utah, Oregon, Idaho, and Montana. States completed in 2013 include Colorado and Texas. States completed in 2014 include New Mexico and Washington. States planned for 2015 include Arizona and Wyoming.

In 2013, two additional states (Colorado and Texas) were roadmapped. An online National Environmental Policy Act (NEPA) Database (Young and Levine 2014) and a best practice paper for Coordinating Permit Offices (Levine, Young, and Witherbee 2013) were also developed. In 2014, we are again roadmapping two additional states for geothermal (Washington and New Mexico), but are also expanding the project to include utility-scale solar and bulk transmission infrastructure development projects.

The roadmap has been met with widespread support from industry and agency personnel (http://en.openei.org/community/blog/geothermal-stakeholder-feedback-grr). It has helped to reduce duplication of efforts, facilitate communication, and provided certainty in areas of new geothermal development (http://en.openei.org/wiki/RAPID/Roadmap/SuccessStories).

In the early years of the project, minimal effort was placed on the development of a Web interface, with the focus centering on outlining the permitting process and identifying concerns.

In 2014, the effort is expanding to include development of a user-friendly web interface. We are combining what were the Regulatory Roadmap and NEPA Database into a Regulatory and Permitting Information Desktop (RAPID) Toolkit (http://en.openei.org/wiki/RAPID), and are expanding the tools to include a Resource Library, a Permitting Atlas, and Best Practice tools. With the expansion of the data and information offered, a greater emphasis is being placed on the Web interface and usability of the tool to quickly obtain the desired information.

Throughout this period of development, other industries identified parallel concerns. In March 2012, President Barack Obama issued Executive Order 13604, Improving Performance of Federal Permitting and Review of Infrastructure Projects (Obama 2012). Several White House reports and Presidential Memorandums have been issued about the topic since then (see http://en.openei.org/wiki/RAPID/About). A White House Rapid Response Team for Renewables (RRT-R) with representatives from each of the federal agencies has been working to respond to this Executive Order, addressing regulations for all federal agencies for all major infrastructure projects in the United States. In May 2014, they released an Implementation Plan outlining their current and future efforts for streamlining permitting for infrastructure projects (White House 2014). As part of this executive effort, the RAPID Toolkit team is working closely with the RRT-R to avoid collaborate with their efforts in developing a Permitting Dashboard (http://www.permits.performance.gov) while avoiding duplication of efforts.

Rapid Toolkit Overview

The tools in the RAPID Toolkit are designed to work together, and are designed around three categories: technology (e.g., geothermal, solar, bulk transmission), topic (e.g., exploration, well field, power plant, water rights), and jurisdiction (e.g., federal or specific states). Each tool allows the user to filter the information using at least these three categories. In this way, information from multiple tools can be correlated in the system and displayed together.

RAPID uses ten major topics and nine additional environmental subtopics to organize geothermal information:

The topics represent the major requirements for geothermal power project development, such as exploration, well field development, power plant development, grid interconnection, and environment considerations. The environment topic is further subdivided into areas of potential impact, mirroring the common sections of a NEPA report, such as cultural, biological, and water resources.

- Land Use Planning
- Siting
- Exploration
- Well Field
- General Construction
- Power Plant
- Grid Connection
- Water Access & Water Rights
- Plant Decommissioning
- Environmental
- On-Site Evaluation
- Cultural Resources
- Flora & Fauna Resources
- Previous Land Uses
- Water Resources
- Air Quality Resources
- Geological Resources
- Aesthetic Resources
- Waste & Hazardous Materials

Currently, five tools are included in RAPID: Permitting Atlas, Regulatory Roadmap, Resource Library, NEPA Database, and Best Practices. We plan to release a beta version of an additional tool, the Permitting Wizard, in late 2014.

Permitting Atlas

The Permitting Atlas is the first step for a user new to the permitting process. The Atlas provides high-level permitting information for users who want a brief overview of permitting on a specific topic in a particular state. For each topic and state (e.g., Exploration in Colorado), a wiki page provides an overview of rules and regulations, highlighting permitting concepts that may be unique for that state.

Additionally, properties have been defined for each topic. For example, all water rights topic pages in the Permitting Atlas have properties defining the lead agency, the water rights classification scheme, the geothermal classification scheme, and information about whether a water right is needed to pump water from a geothermal well (Figure 2, for example). These properties can then be queried to compare multiple states. On the general (non-state-specific) water rights page in the Permitting Atlas, a query pulls all of these properties from all of the state pages into a single table to compare water rights permitting across all states.

Permitting at a Glance

State:	Colorado	
Water Right Agency:	Colorado Ground Water Commission, Colorado Division of Water Resources	
Water Right Classification	Prior Appropriation Coffin v. Left Hand Ditch Co., 6 Colo. 443 (1882) and Colorado Constitution	[1]
Water Right Notes:		
Geothermal Right Classification:	(Mineral and water) In Colorado geothermal resources are considered water rights on private lands, but mineral rights on state and federal lands. However, if the geothermal resource is classified as a mineral right, only the heat is classified as a mineral.	[2]
Is a Water Right Required to Pump Geothermal Fluids?	Yes – The use of water as a material medium is recognized as a beneficial use of such water. All applications to appropriate groundwater in order to utilize its geothermal energy shall be considered an application to appropriate geothermal fluid. (2) (a) Prior to the production of geothermal fluid from a well, other than for flow-testing purposes, a permit to appropriate shall be obtained from the state engineer. This requirement shall not apply to nondiversionary utilization methods; however, such exemption shall not prevent the developer of a geothermal resource from establishing a property right based on his actual utilization.	[3]

Figure 2. Screenshot of Permitting Atlas page for Colorado Water Rights Properties. (http://en.openei.org/wiki/RAPID/Atlas/Geothermal/Water_Use/Colorado) These properties can be queried by users, and a general "Water Rights Page" in the Permitting Atlas compares these properties across all states.

Because all tools in the RAPID Toolkit are organized around the same technologies, topics, and jurisdictions, information from other tools can be displayed on the Atlas pages. In the "Exploration in Colorado" example, the Atlas page would also display a Web-linked list of related roadmaps and resource library items should the user want more detailed information on a specific topic.

Regulatory Roadmap

The Regulatory Roadmap was the first of the RAPID tools to be developed and is currently the most comprehensive tool.

For each RAPID topic (outlined in Table 1), the Roadmap provides an overview flowchart (Figure 3), which leads developers through a series of questions to identify project activities that may trigger a permit requirement or other regulatory action. These overview flowcharts will direct the user to additional federal and state flowcharts that outline the required permits and their processes, but do not constitute professional legal advice or other professional regulatory guidance. The Toolkit should not be used as the only source of information when making decisions regarding developments.

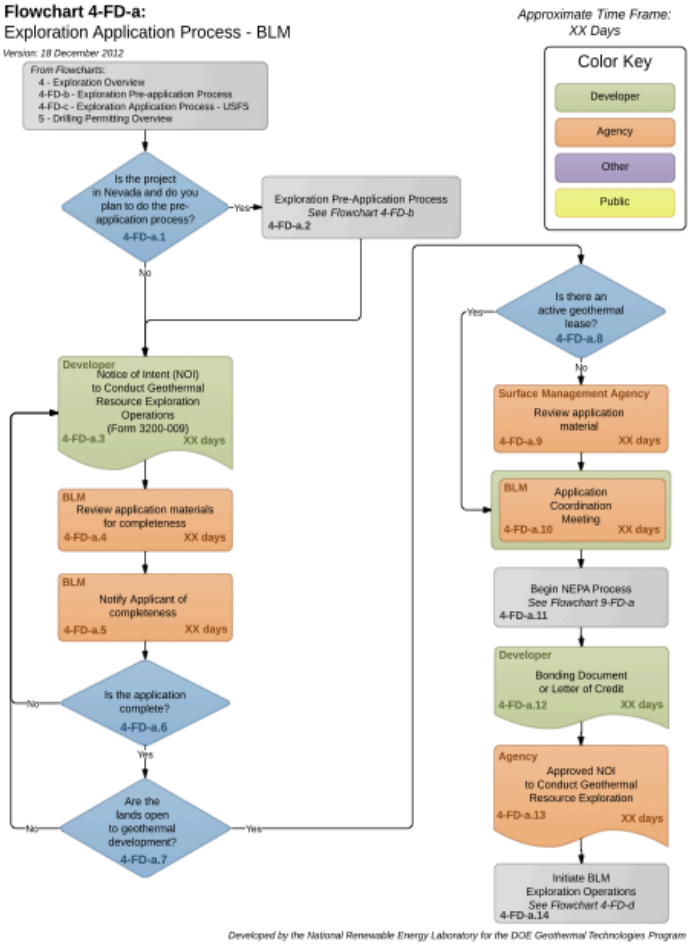

Figure 3. Example flowchart developed as part of the Regulatory Roadmap. Each roadmap provides a version date, and a set of numbered flowchart elements. Supporting text paragraphs are numbered to match each element. Source: http://prod-http-80-800498448.us-east-1.elb.amazonaws.com/w/images/8/83/04FDAExplorationApplication.pdf.

Each flowchart is supported by a narrative, which further explains the flowchart content, and a Web-linked list of relevant regulations, supporting documents, and tools that aid the user in navigating the process. Each roadmap section also provides a list of permit triggers and the primary agency contact information. The flowcharts and content for each section have been reviewed by the permitting agency and by outside legal experts.

Resource Library

Developed in 2014, the Resource Library is a collection of documents and links to relevant permitting and regulatory information, with related metadata about each resource that helps the user search for the desired information. Each resource in the library has a dedicated wiki page with the following categories: summary, publisher, date published, technology, topic, and other metadata. Whenever possible, documents have *not* been uploaded to Open Energy Information (OpenEI); instead, a link is provided directly to the agency-hosted document. For example, the entry in the Resource Library for the Bureau of Land Management's (BLM's) *Notice of Intent to Conduct Geothermal Information* provides a link to the document being hosted on BLM's eForms (http://www.blm.gov/noc/st/en/business/eForms.html). Therefore, if BLM changes or updates its form, the RAPID Resource Library will not be hosting an outdated permit application form.

Items catalogued in the Resource Library include regulations such as statutes and rules, permitting guides, executed Memorandums of Understanding (MOUs), agency guidance documents, and permit applications, as well as tools that may help users make permitting decisions (e.g. Geothermal Prospector, http://www.nrel.gov/gis/tools_gt_prospector.html) and other relevant resources.

As with other RAPID tools, each reference allows tags for technology, topic, and state so that the references can be easily related to other tools in the RAPID Toolkit.

NEPA Database

The NEPA database tool (Young and Levine 2014) was developed in 2013 to collect data and support analyses of NEPA timelines. Non-proprietary documents from previously conducted NEPA analysis for geothermal projects were collected and uploaded to OpenEI. Metadata (e.g. applicant, proposed activity, project location) and timeline information were collected and made available in this NEPA database for use by other stakeholders.

RAPID Toolkit users can search the NEPA Database for previously conducted NEPA analyses that may be similar to new projects in development. They can find analyses conducted in the same geographic location or conducted for similar development activities, such as exploration or drilling.

Information about potential resource impacts and mitigation measures have also been collected from the NEPA reports and added to the database. Expansion of this portion of the NEPA database to allow querying and comparison of impacts and mitigation measures would be useful in development of future NEPA analyses. It would help to provide consistency in mitigation and reduce time and effort in developing effective mitigation measures.

Best Practices

In the course of meeting with stakeholders to review the Regulatory Roadmaps, the RAPID team collected information relating to regulatory and permitting best practices—practices the agencies and industry identified as having the potential to make the permitting processes run more efficiently. Examples include holding pre-application meetings with the applicant and all involved agencies, establishment of a state-level coordinating permit office (Levine, et al, 2013), and development of permitting application checklists.

The RAPID team conducted two "best practice" analyses in 2013 (e.g., Levine, *et. al*, 2013; Witherbee, *et. al*, 2013), and outside parties have developed other best practices and added them to the Best Practices tool (e.g., Development of MOUs, RAPID Toolkit 2013). The goal of this tool is to provide a framework for collecting best practices ideas from regulatory agencies and industry to share for adoption by other developers and/or other agencies and jurisdictions. The Best Practices tool provides a set of analyses outlining best practices, examples of how to implement them, and templates for selected topics. Current best practices include developing MOUs among agencies and developing effective public involvement strategies.

Future Direction

The RAPID Toolkit is a work in progress, and we continue to add content and features to improve its utility to the regulatory and developer community.

Expansion of Current Tool Capabilities

The NEPA Database currently provides information about geothermal NEPA analyses and timelines. Potential future work could include expansion of the database to include information about potentially impacted resources and effective mitigation. Development of this portion of the NEPA database would allow querying and comparison of impacts and mitigation measures, which would help to provide consistency in mitigation and reduce time and effort in developing effective mitigation measures.

Additional Tools

The Permitting Wizard was piloted in 2014 with a beta release anticipated in late 2014. The Permitting Wizard is a user-friendly interface that walks developers through a series of questions relating to their project activities. The responses to these questions are then checked against a list of permit triggers for all permits listed in RAPID. The output is a list of required permits, the developer responses that triggered these permits, and a contact for each permit. A link to the related Regulatory Roadmap is also provided for more detailed information.

Additional tools, such as a Permit Timeline Tracker have also been discussed, but will depend on functionality, support, and collaboration among all parties working to make the regulatory process more efficient.

Additional Types of Projects

As of 2014, the RAPID Toolkit includes three types of projects: utility-scale geothermal, utility-scale solar, and bulk transmission infrastructure projects. Organizations representing additional technologies, including wind, water, biomass, and broadband infrastructure projects, have expressed interested in participating in the RAPID Toolkit project in the future.

Stakeholder Involvement

The success of the RAPID Toolkit project has largely been due to the active participation of industry and agency personnel in providing review and input into its development. Feedback from stakeholders helps to identify the greatest need and target

development of tools that will provide the greatest support and have the largest impact on making the permitting process more efficient.

The amount of information in RAPID is voluminous. It is for this reason that the tool was developed in 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 its users. We continue to work with agencies and the White House RRT-R to engage agency personnel in working together to improve the performance of federal permitting and review of infrastructure projects.

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References

Argonne National Laboratory. "Drilling Waste Management Information System." http://web.ead.anl.gov/dwm/index.cfm.

Battocletti, L., November 2005. *An Introduction to Geothermal Permitting*. Bob Lawrence and Associates, Inc. http://www.geothermal-biz.com/leasing.htm.

Blaydes, P., 2007. *California Geothermal Permitting Guide*. Davis, California: Blaydes and Associates. California Energy Commission. Report No.: CEC-500-2007-027. Contract No.: 500-99-13. http://en.openei.org/wiki/California_Geothermal_Permitting_Guide.

Erlandson, G., J. Sloan, 2002. *Oil and Gas Approvals in the Northwest Territories—Gwich'in Settlement Area: A Guide to Regulatory Approval Processes for Oil and Natural Gas Exploration and Production on Gwich'in Lands and Crown Lands in the Gwich'in Settlement Area of the Northwest Territories*. http://www.aina.ucalgary.ca/scripts/minisa.dll/144/hiproe/hiproesd/sisn+51060?COMMANDSEARCH.

Erlandson Consulting Inc. & Petroleum Research, September 2004. "Offshore Oil and Gas Approvals in Atlantic Canada." Newfoundland, Canada. http://pr-ac.ca/index.php?id=118.

Levine, A., K.R. Young, and K. Witherbee, 2013. "Coordinating Permit Offices and the Development of Utility-Scale Geothermal Energy." Geothermal Resources Council *Transactions*, v. 38. https://www.geothermal-library.org/index.php?mode=pubs&action=view&record=1030662.

Obama, B., March 22, 2012. "Executive Order—Improving Performance of Federal Permitting and Review of Infrastructure Projects." http://www.whitehouse.gov/the-press-office/2012/03/22/executive-order-improving-performance-federal-permitting-and-review-infr.

RAPID Toolkit, 2013. "Memorandums of Understanding (MOUs) for Interstate Transmission Projects." http://en.openei.org/wiki/Transmission/Resource_Library/MOU. "Public Involvement for Transmission Projects." http://en.openei.org/wiki/Transmission/Resource_Library/Public_Involvement.

RAPID Toolkit, 2012. "Directives from the President." http://en.openei.org/wiki/RAPID/About#top.

White House Steering Committee on Federal Infrastructure Permitting and Review Process Improvement [White House], May 2014. *Implementation Plan for the Presidential Memorandum on Modernizing Infrastructure Permitting*. http://www.permits.performance.gov/pm-implementation-plan-2014.pdf

Witherbee, K., K.R. Young, and A. Levine, 2013. "Funding Mechanisms for Federal Geothermal Permitting." Geothermal Resources Council *Transactions*, v. 38. https://www.geothermal-library.org/index.php?mode=pubs&action=view&record=1030638

Young, K.R., A. Levine, 2014. "Geothermal National Environmental Policy Act Database on Open Energy Information." Geothermal Resources Council *Transactions*, v. 38.

Young, K.R., K. Witherbee, October 2, 2012. "Regulatory Roadmap Permitting Issues and Concerns." Presented at the Geothermal Regulatory Roadmap meeting during the 2012 Geothermal Resource Council/Geothermal Energy Association joint meeting and tradeshow. http://en.openei.org/community/files/iii-grr_at_grc_-_issue_identified.pdf.