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Geothermal Permitting— The Business Risks, Potential Regulatory Solutions

Martin Piszczalski, PhD.

Keywords

Permitting, regulatory, business risk, jurisdiction, project planning, project lifecycle, government policy improvements, Bureau of Land Management (BLM), permit planning

ABSTRACT

Geothermal power projects in the U.S. are not being completed quickly. The author argues that this is due to a combination of high permitting risk and high resource risk. Together they make financing extremely difficult. Permitting risk arises from the extraordinary complexity and unpredictability to secure the necessary approvals. The multiplicity of agencies and court challenges lead to project delays that stretch into years. Reducing permitting delays so they demonstrably improve industry performance will require new thinking and new regulatory processes.

Introduction: Geothermal Industry Performance

Only one, new, geothermal power project went online in the United States in 2010. This was among the 146 U.S. projects that the Geothermal Energy Association (GEA) said were under development.¹ Completing a geothermal project in the U.S. currently takes a very long time. Among all the steps, securing permits may be the most time consuming. Indeed, the largest U.S. developer, Ormat, said their projects take “six or more years and half of that is taken up with permitting.”²

High Complexity in Geothermal Permitting

The sheer number of permits itself is daunting. For instance, Nevada Geothermal Power said that “over 100 permits, approvals” were required to complete its Blue Mountain Faulkner project.³ That 50 MW Nevada plant went online in 2009.

The number of participating government agencies in a single project can be well over 30.⁴ A flowchart trying to depict the sequence and required actions of these agencies can become a rat’s nest (Figure 1). In addition to the agencies are dozens of stake-

holder groups.⁵ These special-interest groups are “wildcards;” they routinely challenge the developer and the agencies with regulatory responsibilities.

Some Parameters determining Agencies’ Jurisdictions

- Location of project: State, County
- Resource Owner: Federal, private, State, tribal..
- Environmental Impact: Endangered species
- Water rights: Source, Consumptive
- Any cultural, Native-American issues
- Depth of well, water temperatures, chemistry, MWs
- Land use / planning
- Etc., etc.

Figure 1. Source: Martin Piszczalski, Sextant Research.

Critical Role of Permitting in Geothermal Project Development

Geothermal projects progress in stages. They move past key milestones only when the requisite permit, license or study is obtained. Examples include exploration permits, leases, environmental impact studies, drilling permits, injection permits, water rights, easements, construction/operating permits and the like.

For a geothermal project to be completed on time and within budget, permitting events must be anticipated. They must be integrated into the project’s engineering/construction and financial timelines. Unfortunately, that is not comprehensively possible in today’s permitting landscape. Even the most seasoned developers are caught off guard.

Permitting Risk

When such surprises occur the most significant impact is a delay of project. Examples of the unexpected include:

- a new study ordered
- an unexpected mitigation required

- another agency that must give an approval (i.e., an agency which the developer had not known was part of the process, see Figure 1)
- learning that the submitted application is incomplete
- discovering that the expected process, procedure or sequence is different than what is actually required by an agency
- learning that one agency's approval is contingent on the action/approval of another agency
- surprised by new stakeholders that previously had not been identified
- a citizen court challenge either to the developer or challenging one of the regulatory agencies⁶

In their totality, these unexpected events add major “permitting risk” to the project. After repeatedly hitting the developer, they lead to doubt as to whether the project will ever secure all the necessary permits. Aside from delays, any of dozens of different issues can be “showstoppers” to the project. These include endangered species⁷, tribal burial sites, and the like. One permitting-induced delay may only add a month to a project. However, multiple, unexpected occurrences can add years to the project.

Severe Negative Impact of Permitting-Related Delays on Project Finance

Delays of a year or more, especially after drilling commences, are often fatal to the project. This is due to the time value of money, and especially the high cost of capital to fund the early stages of a project. Delays in the later project stages, on the other hand, raise debt-service levels. Furthermore, a developer firm can have a “burn rate” alone of \$2 million or more a month.

As an example, if a contracted drilling rig sits idly because the drilling permit has not yet been awarded, the project can easily burn through \$500,000/month simply waiting for the permit. Another actual case is the utilityco-op, Naknek Electric Association. “The Alaska Oil and Gas Conservation Commission caused more than \$4 million in added expense by requiring the co-op to treat its geothermal well as an oil and gas well — that is, a well that could encounter dangerous hydrocarbons. The AOGCC notified the co-op three days prior to spudding that it would have to comply with certain regulations.”⁸ Afterwards the developer, Naknek, filed for bankruptcy.

Adding Resource Risk Leads to Unacceptably High Financial Risk

Certainly geothermal projects are not unique in facing complex permitting challenges. Large wind, solar, and water projects also have such complications. The geothermal industry is unique, however, in that its projects also have a great “resource risk.” This is the uncertainty whether a commercial-grade reservoir will be where the developer believes it is. Drilling may produce just “dry holes.” It may not encounter sufficiently high temperatures at the expected depths. Essentially, the project may never find wells with sufficient MWs of power for commercial operation (see Figure 2).

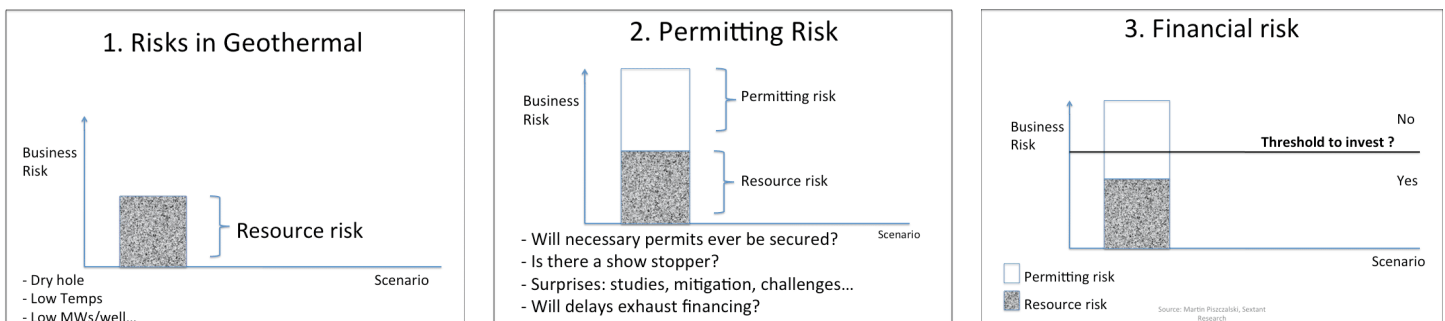
Unfortunately, permitting risk compounds this resource risk. Wind, solar and water projects, in contrast, have no resource risk to them. However, in geothermal, permitting and resource risk together are often a knockout blow in terms of attracting early-stage capital. Most financial firms simply do not have the risk appetite to take on the two simultaneously. For the geothermal industry to prosper, consequently permitting risk must be reduced. Specifically it must become more deterministic. That is, a developer should be able to know ahead of time the necessary and sufficient steps to fully secure the permits.

Government's Current Role in Permitting Risk

Developers do not find government officials to be obstructionists. Indeed, many of the world's top geothermal experts and champions work for U.S. agencies. Instead, the permitting difficulties arise from the enormous number of potential regulations, agencies, and conditions that may critically impact the permitting of the project today.

At the same time, dozens of agencies and officials are uncertain how to handle geothermal. Many officials are in jurisdictions encountering geothermal projects for the first time. These include some government officials who lack the most basic knowledge of the project stages or even what geothermal power is. Regulations are often non-existent, contradictory or vague for geothermal projects in these “virgin” jurisdictions.

Without a defined roadmap available ahead of time, today's developer more plunges into an experimental process. Only after commencing are some of major permitting steps and challenges revealed dynamically. Initiatives such as BLM's Programmatic Environmental Impact Statement⁹ and the Western Governors' Association's Renewable Energy Zones have aimed to reduce this uncertainty. Neither effort, however, provides the deterministic,



Figures 2 a, b, c. Source: Martin Piszczalski, Sextant Research.

legally-binding roadmap required for completing projects on time. Note that most developers could also manage the permitting process far better from their side of the relationship.¹⁰

Government Changes to Improve Permitting

Many government initiatives have been underway to improve permitting. These include steps to foster better coordination between agencies and to accelerate permit approvals. An example of better agency-to-agency coordination is the recently signed Memorandum of Understanding (MOU) between BLM and the State of Colorado. Other geothermal MOUs have been between BLM and the U.S. Forest Service.

In terms of multi-agency coordination, the California's Governor's office has regular joint meetings of several state and federal agencies. The Renewable Energy Action Team (REAT)¹¹ reviews specific projects to move them forward more quickly. Yet another effort is the BLM's "Smart from the Start" program. This initiative prioritizes projects. Going to the top of program's queue are well-under-way, low-conflict projects that have a near-term deadline to receive a federal grant or loan.¹²

To dramatically improve the permitting process, however, far more sweeping reforms are necessary. For instance, New Zealand offers geothermal developers a single-stage hearing option. In this case the developer faces multiple agencies simultaneously. Stakeholders also attend that joint hearing. The developer must prepare all documents and anticipate the challenges/protests to the project. Officials in the end either approve or reject the project. No appeals are possible. The great benefit of this approach is that it gives developers a defined, go / no go, "finish line" to permitting.¹³

An alternative would be to consolidate judicial appeals so they are all heard in a single appellate proceeding. For instance, this was done in the Alaska Natural Gas Pipeline Act of 2003.¹⁴

Another major alternative is to empower a single, high-level government official to have a "sole authority" option to approve the project. The governor of the State of Washington, for instance, can approve power projects. U.S. Senator Dorgan had proposed legislation also granting sole authority to the Secretary of the Interior to approve power projects on tribal lands.¹⁵

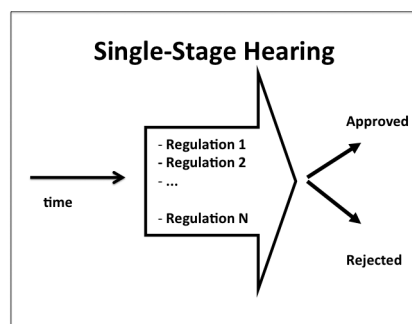


Figure 3. Source: Martin Piszcalski, Sextant Research.

Conclusion

In summary geothermal projects in the U.S. are not being completed quickly. The author argues that this is due to a combination of high permitting risk and high resource risk. Together they make financing extremely difficult. Permitting risk arises

from the extraordinary complexity and unpredictability to secure the necessary approvals. A multiplicity of agencies and court challenges delay projects for years. Reducing permitting delays so they demonstrably improve industry performance will require new thinking and new regulatory processes.

Previous research had been funded by the U.S. Department of Energy. The views expressed here do not necessarily represent the views of the DOE or any U.S. agency or official.

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