

# GEOTHERMAL POWER PLANT SITING IN OREGON

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## ABSTRACT

Sifford Energy Services managed the energy facility siting permitting for California Energy Company's Newberry Geothermal Project. The paper addresses renewable energy permit issues and provides examples of how we resolved them. First, the project is described. Background on the federal permitting that took place prior to state submittals is then given. The Oregon Energy Facility Siting process, with its' attendant issues are discussed next. Resolutions to those issues and conclusions conclude the paper.

## PROJECT DESCRIPTION

The Newberry Geothermal Pilot Project (Project) is a state-of-the-art flash steam geothermal power plant with a nominal generating capacity of 33 MW. It is located near La Pine, in central Oregon. The steam supply will be provided by CE Newberry's (CEN) affiliate company, CE Exploration Company (CEE) which holds development rights to the federal geothermal leases from which the steam will be produced. The parent firm of both affiliates is CalEnergy Co. The Project will sell electricity at wholesale level to Eugene Water & Electric Board (EWEB) and the Bonneville Power Administration (BPA). CEN entered into power sales contracts to supply EWEB with up to 10 MW of metered energy on a kWh delivery contract. Applicant has entered into a separate power sales agreement with BPA to supply BPA with up to approximately 20 MW of meter energy beyond the first 10 MW delivered to EWEB. The objective of the Newberry Project is to demonstrate whether geothermal energy is a feasible alternative source of electricity in the Pacific Northwest to help meet growing regional power demands and needs.

Resource production facilities for the Project include wells, steam gathering and fluid injection pipelines: Approximately eight to ten production wells and three to five injection wells will be developed by CE Exploration Company supply steam to the 33 MW power plant. Separated steam from the geothermal fluids is delivered to the power plant from the wells drilled by CEE. The fluid return pipeline system will return geothermal fluids and condensed steam back to the geothermal reservoir for recycling. Geothermal fluids will be injected back into the reservoir to maintain reservoir life. The exploration, well drilling, and fluid production aspects of the project are fully described in the "Plan of Operations for Exploration, Development and Production" (CEE 1992a).

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Related to the Project will be the construction of approximately 8.5 miles of new 115 kV transmission line which will be dedicated to the local electric utility, Midstate Electric Cooperative. The Project will interconnect with Midstate's existing 115 kV Pringle Falls - Sunriver transmission line and electricity will be wheeled by Midstate to the Lapine Substation, which is a part of the electric distribution system owned and operated by Bonneville Power Administration. The point of delivery for the EWEB and BPA power is the 115 kV bus at the Lapine Substation. BPA will wheel EWEB's output share to EWEB.

### **THE FEDERAL PROCESS**

The Newberry Geothermal Pilot Project is located on federal geothermal leases within the Deschutes National Forest. Development and operations of each major element and phase of a geothermal project on federal geothermal leases is governed by the rules and regulations of the Geothermal Steam Act of 1970 (43 CFR 3200) which require approved Plans of Operation. The exploration, well drilling, and fluid production aspects of the project are described in the "Plan of Operations for Exploration, Development and Production" (CEE 1992a). Power plant construction, operation, disposal, and power transmission are described in the "Plan of Operation for Utilization and Disposal" (CEE 1992b).

Because this was a major federal action, complying with the National Environmental Policy Act meant that an Environmental Impact Statement (EIS) had to be prepared. CEE worked with three federal parties to the project on funding and writing the EIS. The lead agency was the surface land manager, the Deschutes National Forest of the USDA Forest Service (USFS). The mineral manager is the USDI Bureau of Land Management (BLM). The third federal party to the project and EIS was the USDOE Bonneville Power Administration (BPA).

The agencies and their contractors began the EIS process at the start of 1993. Public and agency scoping meetings were held throughout Oregon in February 1993. A draft EIS was prepared and released to the public in January 1994. Public and agency scoping meetings were held in central Oregon in February 1994. A total of 55 letters or responses were submitted by the public during the official comment period. From these, agencies extracted and responded to nearly 600 individual comments.

The Final EIS and subsequent Record of Decision (ROD) by the federal managers were adopted in June 30, 1994. The ROD included numerous conditions to each phase of development which CEE had to comply with in order to proceed. The Oregon Natural Resource Council (ONRC) appealed the ROD and Final EIS for the project. It was settled out of court, as described further below.

### **THE STATE PROCESS**

Three state agencies have direct approval over projects of the size and scope entailed in the Newberry Project. They are listed in Table 1. This paper focuses on the energy facility siting permit process.

<u>REGULATED ACTIVITY</u>	<u>AGENCY</u>	<u>EXAMPLES</u>	<u>NEWBERRY NEED</u>
Air/Water/Solid Waste	DEQ	ACDP, NPDES,	Yes
Drilling, Production, Injection	DOGAMI	Well Permit	Yes
Energy Facility	EFSC	Site Certificate	Yes

Dept. of Environmental Quality  
 Dept. of Geology & Mineral Industries  
 Energy Facility Siting Council (DAS Office of Energy staff)

Oregon Revised Statutes (ORS) Chapter 469.300 requires that an energy facility with a nominal electric generating capacity of greater than 25 MW must submit an Application for Site Certificate (ASC). Oregon Administrative Rules Chapter 345 implements this law and specifies required provisions in the ASC. ASC contents are listed in Table 2.

<ul style="list-style-type: none"> <li>• APPLICANT INFORMATION •</li> <li>• PROJECT DESCRIPTION •</li> <li>• PROJECT LOCATION •</li> <li>• APPLICANTS EXPERTISE •</li> <li>• PROPERTY OWNERSHIP •</li> <li>• MATERIALS ANALYSIS •</li> <li>• GEOLOGY, SLOPE STABILITY &amp; SEISMICITY •</li> <li>• WETLANDS •</li> <li>• LAND USE COMPATIBILITY •</li> <li>• PROTECTED AREAS •</li> <li>• LEGAL OPINION &amp; FINANCIAL STATEMENTS •</li> <li>• NEED FOR FACILITY •</li> <li>• ODEQ PERMIT APPLICATIONS •</li> <li>• ECOLOGICAL COMMUNITIES &amp; SOIL TYPES •</li> <li>• WATER RIGHTS APPLICATIONS •</li> <li>• IMPACTS ON FISH AND WILDLIFE •</li> <li>• RECREATIONAL FACILITIES &amp; OPPORTUNITIES •</li> </ul>
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- THREATENED AND ENDANGERED SPECIES •
- SCENIC AND AESTHETIC IMPACTS •
- CULTURAL RESOURCES IMPACTS •
  - SOCIOECONOMIC IMPACTS •
  - WASTE MINIMIZATION PLANS •
  - MITIGATION PLANS •
- CONSTR. SCHEDULE & DISTURBED AREAS •
  - MONITORING PLANS •
- RETIREMENT AND RECLAMATION •

CEN submitted a Request for Expedited Review on January 18, 1995. On February 6, 1995, the Department of Energy approved the request after determining that the proposed facility was eligible and satisfied the requirements of OAR 345-15-300(2). CEN filed an original and ten copies of the 2-volume Application for Site Certificate for the Newberry Geothermal Pilot Project with the Energy Facility Siting Council in Salem on June 28, 1995.

CEN and EFSC staff met on July 24 to discuss the process of review. CEN received the first request for information on July 31, 1995. To be precise, the request was for 33 individual pieces of information. The information would be needed to determine completeness of the application, which in turn, would then allow the EFSC to rule on the Application. CEN received the second request for information on August 7, 1995. That request was for 17 individual pieces of information, bringing the total to 50. EFSC staff corresponded with CEN and asked for 16 additional requests for information, bringing the total to 66. Almost all of the new requests were related to fish and wildlife issues. On August 30, EFSC staff issued a Project Order, which contained 9 additional requests for information, for a grand total of 75 requests.

CEN first responded to 31 requests on August 16. CEN responded to the remaining 44 requests on September 22, 1995. Discussions and negotiations between CEN and state agencies then took place for a period of two months. Concensus was reached on December 5, 1995, when the Application was deemed complete. On December 6, CEN packaged the complete set of responses into a third volume for submittal to EFSC. A Proposed Order was issued 24 days later. A public hearing was held on January 22, 1996. The full EFSC heard the Application for the first time on January 26 and recommended changes, both substantive and editorial. The full EFSC heard the Application for the second time on March 7, 1996, approved it and issued a Site Certificate for the plant that day.

#### ISSUES

EFSC staff raised a number of issues listed below. One additional relevant issue is also presented.

- Wildlife impacts due to transmission line construction
- Fish impacts due to airborne emissions deposition
- Reclamation bonding
- Land Use: County Plan & Zone Criteria
- Federal Preemption
- Noise

## RESOLUTION

### *WILDLIFE IMPACTS*

CEN worked with the Oregon Dept. of Fish and Wildlife (ODFW) and the USFS on a nesting birds (State Sensitive Species) survey Scope of Work agreeable to all parties. This took place *before* the ASC was deemed complete, at the specific request of both EFSC and ODFW staff. What we learned is that rather than submit a legitimate proposal in a complete application and then negotiate specific requirements, applicants must gain agreement on requirements before applications are deemed complete. Little is left to negotiate because completion is necessary in order to make a position before the Siting Council. Once an application is deemed complete the process goes fairly quickly, even with contested case hearings required. To its' credit, that is exactly what the State of Oregon wanted to do with the energy facility siting process.

The appearance of redundant or duplicative federal and state regulation also showed up in wildlife issues. The FEIS and US Forest Service approvals of each Sundry Notice Permit *already* require that all areas be thoroughly surveyed for sensitive species. As part of every action CEN takes for this project, federal regulation requires Sundry Notices, which in turn includes the following condition: "Surface disturbance under this permit may not start until an on-site inspection has been made and you (CEN) have received a Work Order from the Forest Service Inspector". The US Forest Service Environmental Compliance Officer inspects the project area and immediate environs for Special Status Species and Management Indicator Species. All areas will be surveyed for such species prior to receiving a Work Order which allows the proposed activity.

After nesting bird surveys are complete, CEN will follow Deschutes National Forest Plan Guidelines for all species. and will in order of sequence 1) avoid nests from disturbing activities, which vary site specifically, 2) evaluate potential disturbance prior to planned activities, 3) restrict site disturbance during sensitive periods for the special status species (listed in Response P-9, 4) if the specified restriction period must be compromised, then activity may occur during the last month or two if determined to be least likely to cause nest abandonment and/or 5) activity will take place after the restriction period, the nest taken and mitigation provided.

**Habitat mitigation land location** was another issue faced by CEN and the ODFW. The project area has (only) Habitat Category 2 and 3 lands. Following OAR 635-415-030 Habitat Mitigation Goals & Standards, CEN agreed to work with Fish & Wildlife

Department staff to achieve no net loss of habitat units within a 5 year period for Habitat Category 2 lands. Following the same standards, CEN agreed to work with ODFW staff to achieve no net loss of habitat units within a 15 year period for Habitat Category 3 lands. The habitat mitigation land proposed by CEN, with the specific agreement of the land manager, were within the Newberry National Volcanic Monument. ODFW staff wanted other areas, with unknown financial, regulatory and time hurdles of their own. Fortunately, EFSC staff asserted its prerogative to rule favorably on the completeness of CEN's mitigation proposal.

An example of how CEN dealt with issues not worth bothering over is **active wolverine dens**. CEN's consulting biologist believes finding an active wolverine den in the project area has extremely low likelihood of occurring. This is due to 1) very limited wolverine sitings in the entire state and 2) past and current intensive use of the project area. Regardless, to reach agreement demanded by ODFW, CEN stipulated that active wolverine dens will be avoided by any activities.

Other wildlife issues concerned **raptor protection of the transmission line, bat monitoring and survey protocols**. CEN and state agency staff came up with solutions agreeable to all parties. Bear in mind that previous studies include a Wildlife Resources Report (1993), Biological Evaluation (1994) and the FEIS (1994). Further, the author, on behalf of CEN, met early in 1995 with regional ODFW staff to determine early on any issues of concern. Only *after* that meeting, did demands by that agency escalate. It would have been much more efficient had ODFW brought all these issues up 2 years prior, at the EIS stage. Only a few were, with differing outcomes decided by the USFS in its ROD. The next issue highlights why at least some of the federal decisions were not as stringent as the state desires.

#### *FISH IMPACTS*

The Biological Evaluation prepared by the USFS estimated potential impacts of the project on the prey base for bald eagles, which includes fish. The Biological Evaluation concluded that the probability for adverse impacts on bald eagles is low. This is due to modelling which indicates very low deposition of mercury in East and Paulina Lakes by the geothermal project.

The fish in Paulina and East Lakes are artificially stocked and managed species. Mercury levels in the fish vary by species and depend upon the predator / prey relationship and bioaccumulation. Surveys performed as part of the EIS indicated that larger "trophy" species in the sport fishery of Paulina and East Lakes contain alarmingly high amounts of mercury. As a result, ODFW is considering changing the species mix to lower the bioaccumulation of mercury in the sport fishery. Regardless, this environmental impact was, and remains, unrelated to the Newberry project. CEN did not intend to fund the unrelated ODFW/Health Division annual salmonoid survey to monitor mercury levels in the fish.

Applicant clearly stated in its' Response P13 that it will be responsible for monitoring mercury levels in the course of water quality monitoring surveys. Yet to gain approval of completeness, as one of the last negotiated conditions, CEN succumbed to ODFW demands that it monitor mercury in Tsui chub. This is well beyond monitoring the lake water as originally proposed, which in itself is beyond what monitoring the ROD stipulated.

#### *RECLAMATION BONDING*

EFSC staff asked for detailed estimates of the cost of site reclamation in the event construction of the facility begins but is not completed or in the event the facility is closed prior to commencement of commercial operations. (Bear in mind that well pad reclamation is governed by both federal and state geology agencies and is not a part of the Site Certificate. So well abandonment is exempt from state siting authority.) Federal and state duplication of activities on federal lands appears again here.

A condition of the federal Record of Decision is that "upon site abandonment, grades will be contoured and revegetated to their original conditions, where practical" (p. 13). The FEIS includes this condition: "Roads and all developed project areas, including the power plant site, well pads, pipeline corridors and transmission line area will be obliterated and restored to a natural setting according to U. S. Forest Service standards, once the project is decommissioned, or if individual roads are deemed necessary" (p. 4-76).

Regardless, CEN agreed to a total site reclamation cost - and subsequent bonding - of about \$550,000. This includes plant equipment removal, pipeline route obliteration and revegetation, gating of roads, and tree planting. This is over and above state well pad reclamation bonding, federal well pad reclamation bonding, and federal site reclamation bonding.

#### *LAND USE: COUNTY PLAN & ZONE CRITERIA*

State siting regulations call for facilities on federal land to show compliance with the applicable land management plan. The FEIS and ROD concluded that the Newberry project met the Deschutes National Forest Land Management Plan. That should have been the end of it. Further, a Memorandum of Understanding (MOU) between Deschutes County and the Deschutes National Forest gives Deschutes County the opportunity to review proposed non-Federal activities or permanent facilities proposed by permittees (such as the Project), on Federal lands. In Section 2(d) of the MOU, Deschutes County and the U.S. Forest Service agree that the Deschutes County Year 2000 Comprehensive Plan recognizes the Deschutes National Forest Land Management Plan as the determining document for land use decisions on Federal land within the Deschutes National Forest. The Deschutes County Community Development Department commented on the EIS. Deschutes County recognized in its comments on the EIS that land use permits for the Newberry Project do not need to be obtained from the County because the proposed project will be located on lands managed by federal agencies subject to the MOU.

So the Newberry Project met the applicable federal land management plan. And an efficient arrangement between Deschutes County and the federal governments deferred local land use compliance to the land manager. In spite of this obvious land use compliance, CEN used experienced land use attorneys to write findings against both County Comprehensive Plan and Zoning ordinances. CEN did so at the specific request of EFSC staff - not Deschutes County. Where County Comprehensive Plan and Zoning ordinances could not be met, exceptions were taken to meet statewide planning goals. After much time and money was spent justifying - but not altering - **pipeline corridor widths, transmission pole and structure heights, and acreage limitations**, the EFSC concluded that land use criteria was met. This truly was a redundant issue. Why did the state force it? See the federal preemption discussion below for an answer.

As an aside, stipulations of both the ROD and MOU require the Project to utilize the Deschutes County Building and Safety and Environmental Health Departments to assure compliance with State and local regulations by these departments.

#### *FEDERAL PREEMPTION*

Tied very much to land use, the federal preemption issue actually showed up several times in this process. First, the **land use** issue was pushed by the State of Oregon so as not to acknowledge federal preemption. This was done even though an Assistant Attorney General advising the EFSC wrote a law review article several years ago documenting the federal preemption of geothermal resource development. This includes both legislative actions and judicial confirmation of the federal laws. Regardless, the EFSC staff asserted itself in this issue. CEN simply made a rational economic choice of complying with land use findings rather than make the proverbial "federal case" out of it. CEN did, however, expressly reserve its' right to argue that federal laws, regulations and requirements preempt state and local regulation. Other arguably preempted issues included **noise and habitat mitigation**.

#### *NOISE*

CEN established in its Application that it would be complying with the noise provisions of GRO Order No. 4. That is, noise levels will not exceed 65 dBA at the lease boundary, or 0.8 km (0.5 miles) from the source, whichever is greater. To their credit, EFSC staff read the FEIS on this subject and had no problems with this issue. Near the end of the process, however, an EFSC member made an issue out of complying with state noise standards. These regulations limit time-of-day noise levels, and **increases over ambient conditions**. Modelling documented in the EIS, and satisfactory to federal agencies, indicated that the plant operations would not be heard over ambient conditions at sensitive receptor points. Still, at the last minute, CEN had to clarify for the EFSC member some acoustic engineering basics. Approval was then granted. Noise mitigation that CEN will be providing includes containing power plant facilities inside of a building,

installing mufflers on exhaust stacks of all diesel and gas-driven vehicles, and restricting vehicle operations to established roads.

#### *ROADLESS AREAS*

The Oregon Natural Resource Council (ONRC) appealed the Final Environmental Impact Statement for the project. In an out of court settlement which resulted in ONRC withdrawing their appeal, the Applicant's affiliate company CE Exploration agreed to mitigate the impact of the project on the **North Paulina Roadless study area** by establishing with the Deschutes National Forest a reforestation program within the Newberry National Volcanic Monument. This program will, on an acre-for-acre basis, block and remove roads and replant areas that have been impacted by previous logging activities within the Monument for every acre the well field development impacted within the former North Paulina Roadless study area.

#### CONCLUSIONS

CalEnergy is privileged to be the first firm to site a geothermal project at the state and federal levels in Oregon. CEN and SES previously worked with the EFSC staff in the development of the facility siting regulations. We worked closely with staff and appreciate their patience in achieving mutual goals of the process.

Yes, a few lessons were learned. SES and CalEnergy patiently waded into the Oregon renewable energy facility siting pool. On the plus side, the pool turned out to be only slightly murky due to comprehensive administrative rules. Give state agencies credit when they try to cover all the bases. And when rules can be understood by most laymen.

On the negative side, what constitutes acceptable completion of those requirements can be frustrating and expensive to all renewable energy developers, not just the geothermal industry. The main reason of course is that the majority of rules are directed towards plants using fossil fuels and built on private land. In those cases the state is properly protecting its interests where no other authority may exist. No federal agency extensively reviews such projects before going to EFSC.

After going through this process, the author concludes that geothermal plants complying with the federal process - an approved EIS - ought to meet all state standards, de facto. While Oregon or any other state does not want to relinquish authority over significant projects of any kind, the fact remains that CEN simply "recycled" much data from the EIS for its application. Much of the entire exercise was reformatting work that had been done - rather than EFSC staff accepting a complete EIS. Yes the format is different, resulting in the difficult ability to make findings as defined in existing administrative rules.

State agencies are only following orders, and do what the legislature directs them to do, so the answer lies not at the agency. Instead, it is this author's opinion that legislation should be drafted that allows for renewable energy projects on federal land, with an approved EIS, to be exempt from the EFSC process. If there is concern about rampant overdevelopment (unlikely in the current market), than a cap on capacity or sunset date could be included.

## REFERENCES

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## ACKNOWLEDGEMENT

The views expressed herein are those of the author and not CalEnergy Co. SES thanks CalEnergy Co. for allowing it to release EFSC permit data. SES further thanks David McClain of CalEnergy Co. for engaging our firm to do this work.