Geothermal Permitting and Leasing Procedures

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GEOTHERMAL PROGRAM

The objectives of the Commission's Geothermal Program are to manage the orderly and efficient development of geothermal resources on state-owned lands, maximize revenue from that development, ensure that development does not endanger public safety or harm the environment, and assist in achieving California's ambitious renewable energy production goals.

The Commission processes applications for permits and leases on state-owned lands, performs technical evaluation of proposed well drilling, reservoir development, or engineering projects associated with permits or leases, performs on-site inspection to assure production and lease compliance, and verifies royalty calculations and payments. The Commission also handles geothermal permitting and leasing on proprietary lands owned by other state agencies, such as lands owned by the Department of Fish and Wildlife and the Department of Parks and Recreation near the Salton Sea in Imperial County.

All geothermal activities are subject to the requirements of the California Environmental Quality Act (CEQA), and no permit or lease can be issued until the requirements of CEQA have been met.

GEOTHERMAL PERMITS AND LEASES

There are a variety of mechanisms by which the Commission can make state-owned lands available for geothermal exploration and development.

A *Non-exclusive Exploration Permit for Geothermal Resources* is issued for preliminary information gathering, covering activities such as geological, geophysical, and geochemical exploration. An example is drilling of shallow temperature gradient holes from a truck-mounted rig. This permit does not give the permittee a preferential right to a geothermal lease.

A *Geothermal Resources Prospecting Permit* gives the permittee the exclusive right to explore the permit area for two years with a possible two-year extension. This permit is generally issued for lands where the existence and nature of the geothermal resource is not well known, such as lands that may indicate potential but need additional exploration or lands that have never been explored. Prior to issuance, an applicant is required to submit a *prospecting program* containing a time schedule of prospecting activities, such as surveys, tests, or experiments using geological, geophysical, or other exploratory methods. A prospecting permit requires the drilling of at least one geothermal well to a sufficient depth to determine the presence of commercially valuable geothermal resources and to measure the production potential. If geothermal resources are discovered in commercial quantities the permittee has a preferential right to a lease.

A *State Geothermal Resources Lease* may be issued by the Commission through competitive public bidding, as provided in PRC § 6911, or through negotiation pursuant to PRC § 6919. The Commission typically conducts competitive lease sales in areas where the existence and nature of the geothermal resource are fairly well established, meaning where the lands display strong

indications of geothermal resources and a likelihood of commercially producible geothermal energy. Such lands may be identified by staff or nominated by holders of exploration permits, or any other party qualified to hold a lease. Any state-owned lands may be nominated and designated for competitive lease sale, provided that lands within a valid and effective prospecting permit may be nominated and designated, but may not be leased prior to the termination of that prospecting permit.

In lieu of conducting a competitive lease sale, the Commission may issue leases through negotiation if any of the following conditions exist: (a) wells drilled upon private or public lands are draining or may drain geothermal resources from state-owned lands, (b) the lands are determined to be unsuitable for competitive bidding because of their small size, irregular configuration, or inaccessibility from surface drill sites, (c) the state owns a fractional interest in the lands, or (d) the lease is determined by the Commission to be in the best interests of the state.

PERMITS AND LEASES ISSUED

The Commission issued its first *Geothermal Resources Prospecting Permit* near the Salton Sea in Imperial County in 1960, and its first permit at The Geysers in Sonoma and Lake Counties in 1966. Permits were later issued for lands beneath Mono Lake in Mono County, Owens Lake in Inyo County, the Alkali lakebeds in the Surprise Valley of Modoc County, and near Honey Lake in Lassen County. The Commission issued 57 permits during the 1960s, 24 during the 1970s, 10 during the 1980s, and none in the 1990s. Since 1984, four permits have been issued – one in 2006 and one in 2011 (extended in 2013) – both covering the same 640-acre parcel in Inyo County. In 2012, two permits were issued, one in Siskiyou County and another in the northern Geysers. Only eleven of the 95 permits resulted in the drilling of geothermal exploratory wells, and nine geothermal leases were ultimately derived from the conversion of prospecting permits – two at The Geysers and seven near the Salton Sea.

The Commission issued its first *Geothermal Resources Lease* near the Salton Sea in 1964, and its first leases at The Geysers in 1971. To date, the Commission has issued 41 geothermal leases, all at The Geysers or the Salton Sea. Of the 41 leases, ten were issued through conversion of prospecting permits, 15 were issued through competitive bidding, seven were acquired from the federal government, and nine were issued through negotiation. At one point in 1985 more than 12,000 acres of state-owned lands were under lease.

At present, the Commission has seven active geothermal leases at The Geysers covering 7,247 acres, two parcels covering 895 acres at The Geysers where the state has a $1/16^{th}$ reserved mineral interest, four leases at the Salton Sea covering 1980 acres, and one active prospecting permit covering 640 acres in Inyo County. At current prices, the leases provide about $5.3 million in annual royalties to the state. The leases at The Geysers began producing in 1972, and though April 2015 production, has generated more than $199.8 million in revenue to the state.

PROCEDURES

The Commissions procedure for issuing geothermal permits and non-competitive (negotiated) geothermal leases begin with an application. The procedure for competitive leasing begins with lands being selected by staff or being nominated by any party qualified to hold a lease. Both procedures require a CEQA review.

Application Process

The applicant is typically responsible for paying the cost of processing an application. In addition to a non-refundable filing fee of $25, the applicant submits an approximate expense deposit to cover reimbursable services such as the title determination, preparation and circulation of environmental documents, coordination with public agencies, field inspection, and preparation of the permit or lease document. A standard reimbursement agreement is used to formalize the transaction.

The Commission determines the completeness of an application based on the sufficiency of the information provided by the applicant. An application is deemed complete if all parts are adequately completed and the application is returned with the fees and materials requested. If the applicant does not provide a complete application within a reasonable time, the file may be closed and all or any part of the fees retained.

Once an application is deemed complete, the Commission prepares the necessary documents, including preparing the land description, appraising the resource, negotiating lease or permit terms or conditions, and drafting the document. The item will subsequently be scheduled for consideration by the Commission at a public meeting.

Competitive Leasing Process

The Commission conducts competitive public leasing in areas where the lands display strong indications of geothermal resources and a likelihood of commercially producible geothermal energy. The biddable factor could be a cash bonus, a percentage of net profit, or some other factor.

The Commission conducted several competitive lease sales from 1976 through 1983 for 3,500 acres of reserved mineral interest lands at The Geysers, and a total of 14 leases were issued through this process. Those sales revealed that the competitive aspect of the process could be negated through use of the surface-owner matching provision. In a majority of the sales, winning bids were “matched” by the surface owners who had previously entered into an agreement with a particular company. The Commission issued leases to the surface owners, and the surface owner immediately assigned those leases to that company. Once this pattern became apparent, the Commission’s subsequent lease sales drew few bids, all of which were significantly lower than in previous sales. Many potential bidders, including small entrepreneurs and municipal utilities, refrained from participating because the surface owners had already made prior deals with another company.

The Commission has not conducted competitive lease sales for geothermal since the early 1980s. This is not due to the surface owner matching issue, but because there are relatively few lands left available for leasing in areas thought to have commercial geothermal potential. The need for new sources of renewable generation, however, has revived interest in exploring for geothermal resources in recent years.

The competitive leasing process, from selection or nomination to issuance of a lease, involves several steps and the timing can be difficult to estimate. The Commission first requests and evaluates proposals for the environmental review. A contract is then prepared and awarded to the winning bidder. Once public comments are received and a public hearing is held, the Commission

certifies the final document and then staff conducts the lease sale. This process includes publishing a Notice of Intent that explains the bidding instructions and leasing terms, followed by a bid opening or auction date. The surface owner is subsequently notified of their right to match that bid within 30 days. The final step is the Commission issuing a lease to the winning bidder or to the surface owner.

ROYALTIES

Geothermal lease terms are often specified by statute (PRC § 6901 through § 6925), with limited flexibility for negotiation, except when deemed by the Commission to be in the best interests of the State. The monetary terms of a geothermal lease consist of a royalty on production, with a minimum annual royalty, and an annual rental. Payment of a royalty for extraction and use of the subsurface resources is the primary source of compensation from a geothermal lease.

Existing law provides that geothermal leases converted from prospecting permits will have a royalty rate of not less than 10% of the gross value of the resource. It also provides that leases issued by competitive bid have a royalty rate of not more than 16-2/3% in addition to a biddable factor (typically a cash bonus or a percentage of net profit). Existing law also provides a royalty rate of 2% for any mineral products associated with production of geothermal resources in their first marketable form, though commercial recovery of minerals from geothermal resources has yet to occur on any lease issued by the Commission.

Of the thirteen current geothermal leases, six have a royalty rate of 10%, the minimum specified in law, including the two largest leases that were converted from prospecting permits in 1971 and one lease has a royalty rate of 10.5%. The other three leases have a rate of 12.5%. For split estate leases, geothermal operators have typically agreed to pay the surface owner a 2.5% royalty and the mineral owner a 10% royalty. This relationship dates back to the initial commercial development of geothermal resources in California in the 1960s.

One lease also includes a supplemental royalty that replaces a net profits sharing arrangement that originated from a 1976 competitive lease sale. In the 1970s and 1980s, the Commission issued most of its leases through competitive bidding, with a percentage of net profits being the biddable factor. However, the competitive aspect of sales was often negated by the surface owner matching provision in Law. Most of these leases were not developed and surrendered back to the state without yielding any substantial revenue.

Leasing efforts from the 1990s to the present have emphasized direct negotiation with operators that have surrounding land and existing infrastructure. This approach eliminates the risk of holding a lease sale and not receiving any bids. A competitive lease sale also takes considerable time to arrange, as there are environmental requirements and notification procedures. Direct negotiation simplifies the process and hastens development of geothermal resources.
Existing law also provides that once a lease begins producing, the total royalties paid to the state must be equivalent to at least $2 per acre per year. Actual production royalties consistently exceed this amount and the minimum royalty provision is thus rarely triggered.

Rent for Geothermal Leases

An annual rent is collected for geothermal leases, usually a minimum of $1 per acre. The reserved mineral interest that the state does own is far more valuable. Since, 1995, leases include rent of $10 per acre or higher. For example, rent has been increased on some leases as

compensation for granting the deferral of drilling obligations, or increased annually as an incentive for the lessee to develop the lease in quicker. In such cases the rent is usually reduced back to the original $1 or $10 per acre when the lessee fulfills the obligation to develop the lease and begins paying the state production royalty. At present, there is a portion of one geothermal lease with an annual rent of $25 per acre, another at $50 per acre, and one lease at $125 per acre.

Advance Royalty for Geothermal Leases

The most recent geothermal lease includes a new provision requiring the lessee to pay an additional amount as an advance against future production royalty. If the lease is never developed, the state keeps all accrued advance royalty. If the lease is developed and the state begins receiving production royalties, the lessee is entitled to recover all or a portion of the royalties previously advanced.

Renegotiation Provision

Geothermal leases do not contain a "rent review" that typical land leases have. They do, however, contain a provision that is similar in concept in that the leases allow economic terms to be renegotiated twenty years after a lease's effective date and at ten-year intervals thereafter. Most geothermal leases have been amended by mutual agreement to alter royalty and rate requirements before the twenty-year period. Often there is a more compelling argument for lowering a royalty rate than for increasing it, as the economics of operating geothermal facilities becomes more tenuous with age. But the Commission has never reduced royalty rates or rentals on its geothermal leases.

Value of Geothermal Resources for Royalty Purposes

Geothermal leases generate royalty revenue based on the amount of resource produced, the royalty rate in each lease, and the unit value of the resource. From 1972 to 1999, that value was in the form of a "steam price" defined in a contract between Union Oil Company, the lessee, and Pacific Gas and Electric Company, the operator of the power plants to which Union Oil supplied steam. In 1999, Calpine Corporation purchased the interest of both Union Oil and PG&E at The Geysers. In the absence of a steam sales contract, a new method was required to value the steam that Calpine used to generate and sell electrical power. The Commission negotiated a valuation method that defined the value of geothermal resources produced from the leases as a fixed percentage of the value of the electricity generated from those resources. For leases in Sonoma and Lake County that send steam to existing power plants, the steam is valued at 42% of the gross proceeds from the sale of electricity. For leases that will eventually send steam to plants that have yet to be built, the value is only 30% due to the significantly greater cost to construct a new power plant compared to using an existing one. In contrast, the U.S. Bureau of Land Management currently requires a valuation of 17.5% for new plants, which was a concession made in 2005 to stimulate development of geothermal resources.

For geothermal leases in Imperial County, primarily at the Salton Sea geothermal field, the percentage is 25% of gross proceeds. This is because the nature of the resource and the economics of geothermal development there differ significantly from The Geysers.