

Geothermal Permitting and Leasing Procedures

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THE COMMISSION

The Commission was created in 1938 as an independent body with the authority and responsibility to manage and protect natural and cultural resources on State-owned lands and the public's right to access those lands. The commissioners are the Lieutenant Governor, the State Controller and the Governor's Director of Finance. The Commissioners are assisted by a staff of over 200 specialists in mineral resources, land management, boundary determination, petroleum engineering, and environmental science. The staff are supervised by an Executive Officer appointed by the Commission.

STATE-OWNED LANDS

State-owned lands under the Commission's jurisdiction include *sovereign lands* and *school lands*. Sovereign lands were acquired from the federal government at statehood in 1850, and include 4 million acres underlying navigable and tidal waterways, such as the beds of rivers, lakes, bays, lagoons, and tide and submerged lands along the 1,100 miles of coastline to three nautical miles offshore. School lands are what remain of more than 5 million acres acquired from the federal government under the School Lands Grant Act of 1853, which granted the State the 16th and 36th section of every surveyed township (if not already encumbered), and provided a mechanism for the State to select land in lieu of any encumbered lands.

Today, school lands include approximately 460,000 acres owned in fee and approximately 790,000 acres of reserved mineral interest lands held in trust for the support of public education. By statute, revenue derived from school lands supports the State Teachers' Retirement System. Over half of all school lands involve 640-acre parcels scattered throughout the California Desert. The State owns several large tracts of reserved mineral interest school lands at The Geysers geothermal field in Sonoma and Lake Counties—about one-third of the productive acreage there. Compared to federal lands in California, however, the State-owned lands in areas with geothermal potential are relatively limited in acreage and generally consist of scattered parcels.

GEOTHERMAL PROGRAM

Commission staff manages the orderly and efficient development of geothermal energy resources on State-owned lands, maximizes revenue from development, and strives to assure public safety and environmental protection. Statutory authority for the program is in the Public Resources Code within Division 6 (Public Lands), Part 2 (Leasing of Public Lands), Chapter 2 (Oil and Gas and Mineral Leases), Article 5.5 (Geothermal Resources), § 6901 through § 6925. Article 5.5 added through the Geothermal Resources Act of 1967, was amended by the statutes of 1971, 1978, 1983, 1985, 1989, and 2001. Additional provisions are in the California Code of Regulations within Title 2 (Administration), Division 3 (State Property Operations), Chapter 1 (State Lands Commission), and Article 4.1 (Leases for Exploration and Development of Geothermal Resources), § 2249 through § 2250.

The Commission's Mineral Resource Management Division staff process applications for permits and leases, perform technical evaluation of proposed well drilling, reservoir development, and engineering projects associated with permits or leases, perform on-site inspections to ensure lease compliance, track and report production levels, and monitor royalty payments. The Division also handles geothermal permitting and leasing on proprietary lands owned by other agencies, such as the California Department of Fish and Wildlife and the California Department of Parks and Recreation.

GEOTHERMAL PERMITS AND LEASES

There are many ways the Commission can make State-owned lands available for geothermal exploration and development, but the primary way is by issuing permits and leases.

A Non-exclusive Exploration Permit for Geothermal Resources, is issued for preliminary information gathering for purposes such as geophysical surveying, geochemical testing, and exploratory drilling. For example, the drilling of shallow temperature gradient holes from a truck-mounted rig would be covered by this permit.

A Geothermal Resources Prospecting Permit gives the permittee the exclusive right to explore an area for two years, with a possible two-year extension. This permit is issued for lands where the geothermal resource is poorly understood and requires additional verification. The first step in the application process is for the applicant to submit a prospecting program with a planned prospecting and exploration chronology. These may include surveys, tests, geological or geophysical experiments, or exploratory drilling. Prospecting permits require drilling at least one geothermal well to sufficient depth to identify commercially valuable geothermal resources and measure production potential. If a resource is discovered in commercial quantities, then the permittee is granted the preferential right to a lease owing to their prior investment.

Without a prior prospecting permit, a Geothermal Resources Lease can be obtained through a winning bid at a public lease sale or by direct negotiations as prescribed in Public Resources Code § 6919. The Commission has competitive lease sales in areas where the existence and nature of a geothermal resource are well understood. Such lands would have previously shown strong indications of the presence of geothermal resources, and demonstrated the likelihood of commercially viable geothermal energy. These lands may be selected by staff, nominated by exploration permits holders, or nominated by any qualified potential leaseholder. Any State-owned parcel may be nominated and designated for competitive lease sale, though those in an area where there is a valid and effective prospecting permit must first have that permit expire or be quitclaimed.

Alternatively, the Commission may issue leases through negotiation if any of the following conditions exist: (1) wells drilled on private or public lands are draining or may drain geothermal resources from State-owned lands; (2) the lands are deemed unsuitable for competitive bidding because of insufficient size, irregular configuration, limited accessibility to equipment, or other factors; (3) the State owns a fractional interest in the lands, or (4) the Commission determines that the lease is in the best interests of the State.

PERMITS AND LEASES ISSUED

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 1/16th 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 bring in about \$5.3 million in annual royalties to the State. The leases at the Geysers began producing in 1972, and through fiscal year 2015-2016, have generated over \$210.5 million in revenue to the State.

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 State-owned 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, but none in the 1990s. Since 1984, four permits have been issued – one in 2006 and one in 2011 (extended in 2013)—both covering the 640-acre parcel in Inyo County. In 2012, two permits were issued, one in Siskiyou County and another in the northern Geysers. Eleven of the 95 permits resulted in geothermal exploratory well drilling. Nine geothermal leases **were derived** from converting prospecting permits—two at the Geysers and seven near the Salton Sea. In the early 1970s, dozens of geothermal prospecting permit applications were submitted, but no permits were issued. In the 1980s, many more applications were submitted for permits covering the bed of Clear Lake, but none were approved.

The Commission issued its first Geothermal Resources Lease near the Salton Sea in 1964, and its first leases at The Geysers in 1971. The Commission has issued 41 geothermal leases at The Geysers or the Salton Sea. Recent leases cover lands that had been under lease years earlier. Of the 41 leases, ten were issued through conversion of prospecting permits, 15 through competitive bidding, seven were acquired from the federal government, and nine were issued through negotiation.

PROCEDURES

The first step for a geothermal permit or negotiated lease is to submit an application. The procedure for competitive leasing starts with staff selecting the lands, or the lands are nominated by a party qualified to hold a lease. Both steps require CEQA review and Commission approval.

Application Process

The application was developed in accordance with Government Code § 95940 and covers surface and subsurface resource development. Unless otherwise provided, the applicant is responsible for paying the actual cost of processing an application, a non-refundable \$25 filing fee, and an approximate expense deposit to cover reimbursable services. These services may include an initial title determination, preparation and circulation of environmental documents, coordination with public agencies, preparation of the permit or lease document, field inspection, and other related staff work. Any unused portion of the deposit is refunded.

Commission staff determines whether an application is complete based on information the applicant provides. An application is deemed complete if each section is adequately complete and staff receives the requisite fees and materials.

Competitive Leasing Process

The Commission conducts competitive public leasing in areas where State-owned lands display strong indications of geothermal resources and commercially producible geothermal energy is likely. The biddable factor can be a cash bonus, a percent of net profit, or another factor.

The Commission conducted several competitive lease sales between 1976 and 1983 for 3,500 acres of State-owned reserved mineral interest lands at the Geysers, and 14 leases were issued through this process. In most 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 they assigned those leases to another company.

The Commission has not conducted competitive lease sales for geothermal since the early 1980s, because the State has relatively few lands available for leasing in areas thought to have commercial geothermal potential using existing technology. But, Commission staff is optimistic that there may be future opportunities to offer State-owned lands for leasing through the competitive public bidding.

MONETARY CONSIDERATIONS

Geothermal lease terms are often specified by statute (PRC § 6901 through § 6925), with limited flexibility for staff negotiation, save when deemed by the Commission to be in the best interests of the State. The monetary terms of a geothermal lease consist of minimum annual royalty that is a function of production levels and an annual rental payment. Royalty remittances for the extraction and use of subsurface resources are the largest source of geothermal lease revenue. The nominal rent is typically unrelated to surface use, as the State often does not own the surface.

Royalty on Geothermal Production

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

In the 1970s and 1980s, the Commission issued most of its leases through competitive bidding, with the percent of net profits being the biddable factor. However, the competitive aspect of sales was often negated by the surface owner matching provision in statute. Most leases were not developed and surrendered back to the State.

Leasing efforts from the 1990s through the present emphasize direct negotiation with operators possessing surrounding land and existing infrastructure. This approach eliminates the risk of holding a lease sale and not receiving any bids, which has occurred before. A competitive lease sale takes considerable time to arrange. Direct negotiation simplifies the process and accelerates the development of the State resources.

Minimum Royalty for Geothermal Leases

Current law specifies that once a lease begins producing, the royalties paid to the State are equivalent to at least \$2 per acre per year. Actual production royalties, however, exceed this amount. So the minimum royalty provision is rarely triggered.

Annual Rent for Geothermal Leases

Annual rents are charged, even though the State does not own the surface of most lands covered by its geothermal leases. Reserved mineral interests that the State does own are far more valuable. Nevertheless, existing law requires an annual rent of not less than \$1 per acre. This was the rent charged for most geothermal leases issued during the 1970s through 1990s.

All leases issued since 1995 have rents of at least \$10 per acre, and—when circumstances warrant—higher amounts. Rent has 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 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 actual production royalty.

Advance Royalty for Geothermal Leases

The most recent lease includes a provision requiring the lessee to pay an additional bonus 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 lack the rent review provision typically required in surface leases. Most geothermal leases, however, require that economic terms are to renegotiated twenty years after the effective date, and at ten-year intervals thereafter. Most geothermal leases have been amended by mutual agreement to alter economic terms (the royalty rate and rent amount) before twenty years elapsed. Current law limits the extent to which terms can be increased, but does not limit the amount they can be decreased. 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. The State has never reduced royalty rates or rentals on its geothermal leases and likely would only consider it to avoid the premature abandonment of resources.

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 resource's unit value. From 1972 to 1999, that value was in the form of a steam price defined in an arm's-length contract between Union Oil Company the State's lessee, and Pacific Gas and Electric Company, the operator of the power plants to which Union supplied steam. Union had to obtain Commission approval to use that steam price for calculating the royalty.

In 1999, Calpine Corporation purchased Union's and Pacific Gas and Electric's interest 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. Staff negotiated a valuation method that defined the value of geothermal resources produced from State leases as a fixed percent of the value of 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 percent of the gross proceeds from the sale of electricity, which was greater than the value under the previous contract. For leases that will eventually send steam to plants yet to be built, the value is only 30 percent 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 only 17.5 percent for new plants, which was a concession the federal government made in 2005 to stimulate development of geothermal resources. For State geothermal leases in Imperial County, primarily at the Salton Sea geothermal field, the percentage is 25 percent of gross proceeds. This is because the nature of the resource and the economics of geothermal development differ significantly from The Geysers.