

State of California  
BOARD OF EQUALIZATION  
PROPERTY TAX RULES

Division 1. State Board of Equalization-Property Tax  
Chapter 4. Equalization by State Board  
Article 4. Change in Ownership and New Construction

**Rule 473. Geothermal Properties.**

*Authority:* Section 15606, Government Code.

*Reference:* California Constitution, Article XIII, Section 1; California Constitution, Article XIII A, Section 2; Sections 51 and 110.1, Revenue and Taxation Code; and *Phillips Petroleum Co. v. County of Lake* (1993) 15 Cal.App.4th 180.

(a) The provisions of this rule apply to the valuation of the rights to explore for, develop, and produce useful geothermal energy (hereafter, "proved reserves"), and the real property associated with these rights. The provisions of this rule apply only to the valuation of property for lien dates, including lien dates for both the regular and the supplemental assessment rolls, that occur on or after January 1, 1996.

**(b) GENERAL.**

(1) Rights to enter in or upon land for the purpose of exploration, development, or production of proved reserves are taxable real property interests to the extent they individually or collectively have ascertainable value.

(2) It is the right to explore, develop, and produce that is being valued and not the physical quantity of resources present on the valuation date.

(3) The unique nature of geothermal property interests requires the application of specialized appraisal techniques designed to satisfy the requirements of Article XIII, Section 1, and Article XIII A, Section 2, of the California Constitution. To this end, the valuation of such properties and other real property associated therewith shall be pursuant to the principles and procedures in this section.

(4) Notwithstanding any other provision in this section, any appropriate valuation method described in Section 3 of Title 18 of this code may be applied in the event of a transfer of an ownership interest in the right to explore, develop, or produce a geothermal property.

**(c) DEFINITIONS.** For the purposes of this section:

(1) "Geothermal energy" means heat generated by natural processes beneath the earth's surface.

(2) "Proved reserves" means that quantity of geothermal energy capable of supporting the economic life of the geothermal project or geothermal projects to which it is assigned, reassigned, or which is otherwise marketable and which geological and engineering information indicate with reasonable certainty to be recoverable in the future, taking into account reasonably projected physical and economic operating conditions.

(3) "Geothermal project" means the integrated operation involving the right to develop and/or produce proved reserves, the delivery systems, the energy conversion plant(s), and all associated supporting assets or holdings.

(4) "Energy Conversion Plant" means a facility designed to convert geothermal energy to a useful application or transportable energy form.

(5) "Exploration" means searching for and determining the location, quantity, nature, and quality of proved reserves.

(6) "Development" means preparing geothermal energy for production, including the process of securing the necessary approvals from government agencies and the construction of improvements and improvements to land necessary to begin the production of proved reserves.

(7) "Production" means the removal of proved reserves from the earth for economic purposes after completion of construction and initial testing.

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### **(d) VALUATION OF GEOTHERMAL PROPERTIES PRIOR TO PRODUCTION.**

(1) Exploration. The right to explore for geothermal energy is taxable to the extent it has value separate from the rights to develop and produce any discovered proved reserves. The right to explore shall be valued by any appropriate method or methods as prescribed in Section 3 of Title 18 of this code taking into consideration appropriate risks; however, in no event shall the right be considered to be under construction.

(A) While the construction of improvements or physical alterations to land, e.g., access roads, fencing, drill pad preparation, drainage or water systems, land clearing, etc., during exploration constitutes assessable new construction (subject to the provisions of Section 463 of Title 18 of this code), it does not add to or diminish the value of the right to explore.

(B) Costs associated with obtaining government approval related to new construction shall be considered when valuing new construction. Costs associated with obtaining government approval to operate, (e.g., expenditures for zoning variances, environmental impact studies, and operating permits) and costs of drilling and testing exploratory wells, and performing seismic surveys, shall not be considered for purposes of valuing the right to explore. These latter elements of cost may appear in the value of the right to produce when production starts.

(C) Once the base year value of the right to explore is determined and enrolled, it shall not be changed except to reflect diminution in value from all causes as well as any increase in value resulting from the annual rate of inflation as prescribed by Section 460 of Title 18 of this code, or to reflect a change in ownership, or as provided in subdivision (f) of this rule.

#### (2) Development

(A) Although the right to develop and the right to produce proved reserves are separate rights, the value of the right to develop is virtually unascertainable separate from the right to produce. Therefore, no separate value shall be established for the right to develop. Any value attributable thereto shall be deemed to be included in the base year value of the right to produce proved reserves established in accordance with subsection (e) of this rule. In no event shall the right to develop or produce proved reserves be treated as being under construction.

(B) Whether the construction of improvements or alteration to land during development qualifies as new construction shall be determined by reference to Sections 463 and 463.5 of Title 18 of this code and Section 70 and following of the Revenue and Taxation Code.

(C) If there is a change in ownership during development, the base year value of the right to produce proved reserves shall be established as of the date of the change in ownership. Increases and decreases in the quantity of proved reserves following a change in ownership shall be assessed in accordance with subsection (e) of this rule.

### **(e) VALUATION OF GEOTHERMAL PROPERTIES DURING PRODUCTION.**

(1) The base year value of the right to produce proved reserves shall be established as of March 1, 1975, or thereafter, when such right undergoes a change in ownership. If there is no change in ownership of the right to produce during development, then the base year value of the right to produce proved reserves shall be established as of the date production commences after completion of construction and initial testing. The market value of such rights is determined by valuing the estimated quantity of proved reserves that can reasonably be expected to be produced during the time period these rights are exercisable.

(A) The valuation of the proved reserves shall be based on present and reasonably projected economic conditions (e.g., capitalization rates, product prices, operating expenses, and future capital expenditures required to maintain the income stream, etc.) normally considered by knowledgeable and informed people engaged in operating, buying, or selling geothermal properties or marketing the production therefrom.

(B) While the assessor has full discretion to select the appropriate appraisal method, the income approach will generally be the most relevant appraisal method employed in establishing a value for the total property.

(2) (A) Increases in proved reserves that occur following establishment of the base year value of the right to produce proved reserves and that are caused by changed physical, technological, or economic conditions constitute additions to the right to produce which have not been assessed and which shall be assessed on the regular roll as of the lien date following the date they become proved reserves. The increased quantity of proved reserves shall be used to establish the value of the addition to the property interest, which value shall be added to the adjusted base year value of the proved reserves remaining from prior years as the separate base year value of the addition.

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(B) Reduction in recoverable amounts of proved reserves caused by production or changed physical, technological, or economic conditions, or a change in the expectation of future production capabilities, constitute reductions in the value of the right to produce and shall correspondingly reduce the adjusted base year value on the subsequent lien date.

(3) The valuation of the new construction of wells (including, but not limited to replacement wells), and improvements shall be in accordance with this Section and Sections 463 and 463.5 of Title 18 of this code.

### (4) Value Calculation

(A) The base year value or the adjusted base year value of the right to produce as quantified by proved reserves for the current year's lien date shall be calculated as follows:

1. Estimate the market value of the total property and estimate the quantity of proved reserves that may reasonably be expected to be consumed, using current market data. (The quantity of proved reserves may be converted to units appropriate for the project being valued, such as megawatt hours of electrical energy, British Thermal Units, pounds of steam, etc.)

2. Estimate the current value of proved reserves by segregating the value of land (other than proved reserves), improvements to land constructed during the exploration, development and production stages (e.g., roads, drill pads, energy delivery systems, drainage channels, etc.), and other improvements and personal property from the unit value by an allocation based on the current market value of the component parts.

3. Estimate the quantity of additions to proved reserves by subtracting the prior year's proved reserves, less depletion, from the estimated current proved reserves.

4. Estimate the value of proved reserves removed (depletion) by multiplying the quantity of the proved reserves removed in the prior year by the weighted average value, for proved reserves only, per unit of proved reserves for all prior base years. The adjusted base year value of the proved reserves remaining from prior years shall be found by subtracting the value of removed proved reserves from the prior year's adjusted base year value.

5. Value the additions to proved reserves by multiplying the quantity of proved reserves found in 3. above by the current market value per unit of total proved reserves, calculated using the values found in 1. and 2., above.

6. The current adjusted base year value for proved reserves only is the value of the prior year's proved reserves, less the depletion calculated in 4. above, factored for inflation as prescribed by Section 460 of Title 18 of this code, and added to the value of the new proved reserves, as calculated in 5. above.

(B) The base year value or adjusted base year value of land (other than the mineral rights) and improvements for the current year's lien date shall be calculated as follows:

1. Determine adjusted base year value of land, improvements to land constructed during the exploration, development, and production stages (including roads, drill pads, energy delivery systems, drainage channels, etc.), and other improvements in accordance with Sections 51 and 110.1 of the Revenue and Taxation Code.

2. Add the current market value of any construction in progress on the lien date.

(C) Declines in the value of the mineral property shall be recognized when the market value of the appraisal unit, (i.e., land, improvements including fixtures, and proved reserves), is less than the current adjusted base year value of the same unit.

### (f) TAXABLE VALUE OF THE RIGHT TO PRODUCE.

Unless the value of the right to produce was established on March 1, 1975 or when such right changed ownership, it shall be established as of the date that production of proved reserves commences and the value shall be placed on the roll as provided by law. When the value of the right to produce proved reserves is enrolled, the roll value of the exploration rights for the same proved reserves shall be reduced to zero.

*History:* Adopted June 29, 1995, effective November 5, 1995.  
Amended and effective June 6, 2001.