Office of

INSPECTOR GENERAL

U.S. Department of the Interior

EVALUATION REPORT

Geothermal Royalties

Report No. C-IN-MOA-0004-2009 March 2010

Cover Photos

Nesjavellir Geothermal Power Plant in Iceland (Upper Left)
Source: http://en.wikipedia.org/wiki/Geothermal_power

Production Size Drilling Rig (Upper Right)
Source: Geothermal Education Office
http://geothermal.marin.org

Turbine Generator at an Imperial Valley (Lower Left)
Geothermal Power Plant in California
Source: Geothermal Education Office
http://geothermal.marin.org

Krafla Geothermal Station in Northeast Iceland (Lower Right)
Source: http://en.wikipedia.org/wiki/Geothermal_power

United States Department of the Interior

OFFICE OF INSPECTOR GENERAL
Washington, DC 20240

MAR 0 9 2010

To: Wilma Lewis
Assistant Secretary, Land and Minerals Management

From: Mary L. Kendall
Acting Inspector General

Subject: Evaluation Report – Geothermal Royalties (C-IN-MOA-0004-2009)

This memorandum transmits our report detailing the results of our evaluation of the Geothermal Program. Specifically, we wanted to determine:

- what royalty rates were actually paid by producing companies using the netback valuation method;
- how these rates compared to the rates outlined in the Energy Policy Act of 2005; and
- what work Minerals Management Service (MMS) was doing to ensure the accuracy of reported data.

Overall, we found that two of eight companies reviewed consistently claimed the maximum deduction percentage and another four companies claimed the maximum deduction percentage in at least 6 of the 12 months reviewed. In addition, we found that MMS performed audits that adequately determined that only allowable deductions were claimed. We found, however, that MMS was not performing a sufficient number of audits to ensure that all geothermal companies were consistently deducting only allowable expenses.

The report contains five recommendations which, if implemented, will improve controls over the geothermal program. We would appreciate being kept apprised of the actions the Department has taken on our recommendations as we will track the status of their implementation. Please have a written response forwarded to this office within 30 days, identifying plans to address the findings and recommendations cited in this report.

Should you have any questions about this report, please do not hesitate to contact me at (202) 208-5745.

INTRODUCTION

Background

Geothermal energy is a renewable resource extracted from heat stored in the earth. (*See Appendix 1: Description of Geothermal Energy*.) Geothermal resources managed by the Bureau of Land Management (BLM), generate approximately 50 percent of the nation's geothermal energy. Between June 2004 and June 2009 geothermal revenues totaling $129.6 million were collected by MMS.

The Geothermal Steam Act of 1970[1] (the Act) authorized the Secretary of the Interior to issue leases for the development of geothermal resources from lands administered by the Department. As of the date of our review 16 companies in 3 states were producing geothermal energy from DOI lands. Under the Act, calculating geothermal royalties was relatively simple. Developers of geothermal fields sold steam and hot water to third party power producers, thereby establishing a sales price upon which royalties could be based. Over time, however, companies began using the geothermal resources for commercial production, generating electricity on site. As a result, in 1991, the Minerals Management Service (MMS) issued new regulations calling for subtracting, or "netting back," the costs of generation and transmission from the electricity's sales revenues. The formula, referred to as the netback method, was complex due to different methods of accounting for depreciation, uncertainty over which costs qualified for deduction, and commingling of federal and nonfederal resources.

The netback method of calculating royalties applies only to leases issued prior to the Energy Policy Act of 2005.

Gross Proceeds
-Allowable Deductions
Net-Back Value
x Lease Royalty Rate
Royalties Due

Why We Did This Evaluation

In 2005, the Energy Policy Act[2] (EPAct) was passed with provisions aimed at simplifying the complex netback royalty calculation. The EPAct directed that, for new leases, the royalty rate be set at "not less than 1 percent and not more than 2.5 percent of the gross proceeds … during the first 10 years of production" and not more than 5 percent of gross proceeds after the initial 10-year period. In June 2007, BLM set the royalty rate at 1.75 percent for the first 10 years of production and 3.5 percent after that. While current lease holders could choose to switch to the new, simplified royalty calculation, none have.

In accordance with the EPAct of 2005, BLM regulations established the following for calculating royalty rates:

First 10 years of production
Gross Proceeds
x 1.75%
Royalties Due

After first 10 years of production
Gross Proceeds
x 3.5%
Royalties Due

[1] Geothermal Steam Act of 1970, 30 U.S.C. Chapter 23, §§ 1001-1028, (as amended).
[2] Energy Policy Act of 2005, 30 U.S.C. Chapter 23, § 1001-1028, (as amended), 43 CFR Part 3200 – BLM, and 30 CFR Part 206.350-.366 - MMS.

We conducted this evaluation to determine (1) what royalty rates were actually paid by producing companies using the netback valuation method, (2) how these rates compared to the rates outlined in the EPAct, and (3) what work MMS was doing to ensure the accuracy of reported data. (*See Appendix 2: Objective, Scope, and Methodology.*)

WHAT WE FOUND

Royalty Rates Actually Paid

We reviewed the eight producing companies that were using the netback method of calculating royalties at the time of our review. (*See Appendix 3: Company Universe.*) The royalty rate contained in the lease for these eight producing companies was 10 percent. Based on our analysis, however, we determined that the average royalty rate actually paid ranged from 0.10 percent to 6.31 percent.[3]

Company Name	Royalty Rate Actually Paid
Empire Energy, LLC	0.10%
Steamboat Hills LP	0.10%
Brady Power Partners	0.52%
Ormesa, LLC	0.52%
Mammoth Pacific LP	0.87%
Coso Geothermal Holdings, LLC	1.58%
Terra-Gen Dixie Valley, LLC	5.96%
Beowawe Power, LLC	6.31%

This occurred because the netback method of calculating royalties allows companies to subtract the costs of generation and transmission from the value of the electricity sold prior to calculating the royalty due. (*See Appendix 4: Examples of Allowable and Unallowable Deductions.*) MMS administrative rules allow companies to deduct allowable expenses, up to 99 percent of the value of gross sales, before calculating the royalty due on the sales. For five companies, this level of allowable deductions caused the royalty rate actually paid to be substantially below the royalty rates established by the EPAct.

We asked why MMS administratively selected 99 percent and were told that, while there was no regulatory deduction threshold, the regulation[4] stated that deductions cannot reduce the resource value to zero. Therefore, MMS officials told us, "as a practical matter and for efficiency purposes," MMS chose to limit the deduction amount to 99 percent. MMS officials were unable to provide any support for how the 99 percent limit was determined. We also asked whether MMS had reconsidered this administratively established 99 percent deduction limit. They stated they had not. MMS officials went on to state that since the deductions were limited to reasonable, actual costs related to electric generation and transmission and were subject to audit, the 99 percent deduction limit was not of significant concern.

An MMS official did acknowledge, however, that companies consistently taking the 99 percent does indicate a potential compliance issue. We identified two companies that took the full 99 percent deductions each month for the entire year, with no fluctuations. In addition, we identified

[3] This was between June 2008 and June 2009.
[4] 30 CFR 206.352(b)(1)(i)

four companies that took the full 99 percent deduction in at least 6 of the 12 months reviewed. Therefore, we questioned the validity of the deductions claimed by these companies and turned these companies over to our Office of Investigations for further review.

Accuracy of Deductions

We reviewed three audits, completed in the last 5 years, performed by MMS or the California State Comptroller's Office on geothermal companies. (*See Appendix 5: Universe of Audits Conducted.*) Overall, the audits were adequately designed to ensure the accuracy of royalties. Specifically, the audits looked at supporting documentation in detail to ensure that only allowable expenses were taken. For example, one audit identified unallowable expenses. As a result, MMS negotiated a settlement with the company for payment of unpaid royalties totaling $6.8 million.

Overall, MMS had only initialed or completed audits on 6 of the 16 producing companies in the last 5 years. Two producing leases had not been audited by MMS in over 15 years. As a result, the royalties paid by some companies may be significantly below the actual royalty owed.

MMS could improve its audit effectiveness by targeting high risk companies for audit. MMS does not require companies to submit monthly gross proceeds or production data. As a result, MMS is unable to do up front checks to identify companies that are (a) consistently claiming the full 99 percent deduction on a routine basis, which should make them a priority for an audit, or (b) failing to submit documents supporting required royalty payments.

RECOMMENDATIONS

The Director, Mineral Management Service should:

1. reevaluate the appropriateness of the 99 percent deduction allowance in light of the royalty rates established in the EPAct and the low royalty rates actually paid.

2. perform either a compliance review or an audit on the six companies deducting 99 percent for more than half of the year to determine the appropriateness or allowability of the deductions claimed.

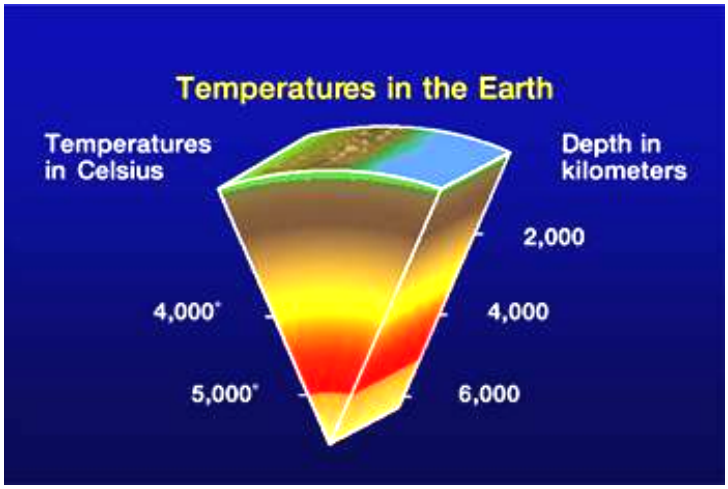
3. require companies using the netback method of royalty calculation to submit gross proceeds and production data in addition to the data already being submitted.

4. develop and implement checks to ensure companies are submitting all required documentation each month.

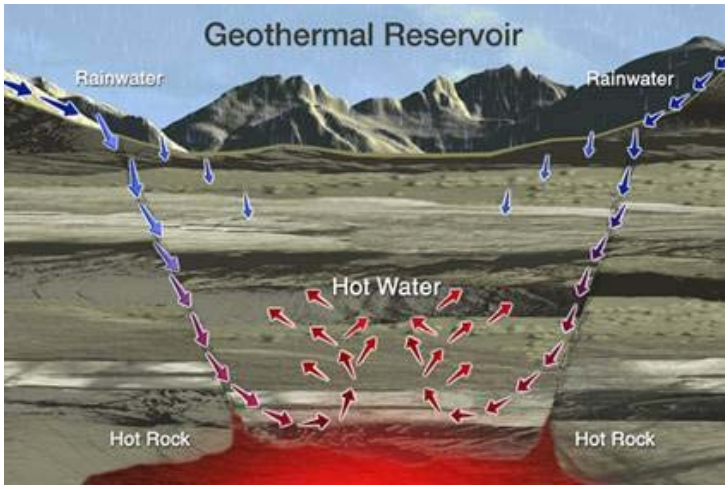
5. develop and implement review procedures to ensure that companies' monthly deduction percentages are properly calculated and used to prioritize compliance reviews or audits.

DESCRIPTION OF GEOTHERMAL ENERGY

What is geothermal energy?
Geothermal energy is defined as heat from the Earth. It is considered a renewable resource because the heat emanating from the interior of the Earth is essentially limitless. It flows from the Earth's interior, primarily by conduction, and is estimated to be equivalent to 42 million megawatts of power.



How does a reservoir work?
A geothermal system requires heat, permeability, and water. When water is heated by the Earth's temperature, hot water or steam can be trapped in rocks under a layer of impermeable rock. This causes a geothermal reservoir, a natural collection of hot water, to form.

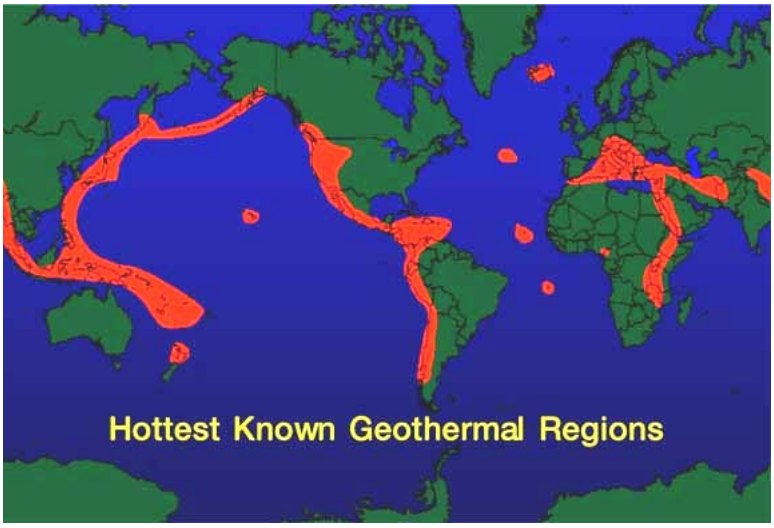


When hot water and steam reach the surface, they can form fumaroles, hot springs, mud pots and other phenomena.

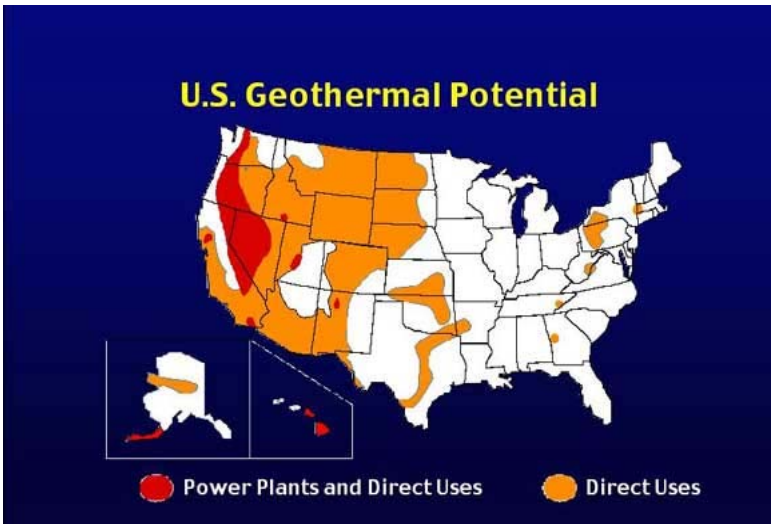
Pictures are used courtesy of the Geothermal Education Office in Tiburon, CA

Appendix 1

Many areas have accessible geothermal resources, especially countries along the Pacific "Ring of Fire" and continental drift zones.

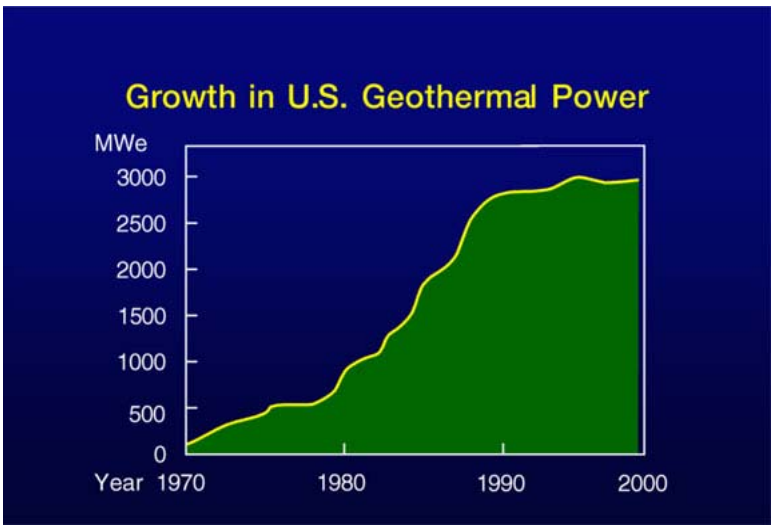


The areas in orange and red are where with today's technology, we can find and use geothermal reservoirs.



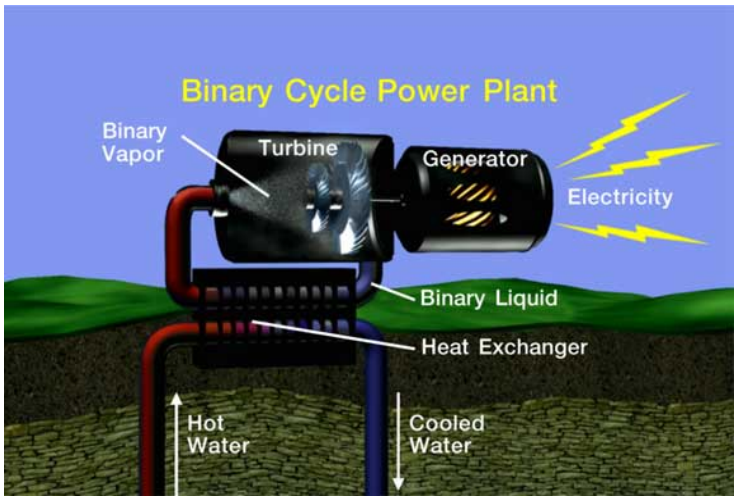
The fastest growth in U.S. geothermal power was from 1980 to 1990 following enactment of federal laws compelling utilities to purchase electricity from independent producers.

Over 2,800 megawatts of electricity from geothermal power plants are supplying about 4 million people in the U.S.

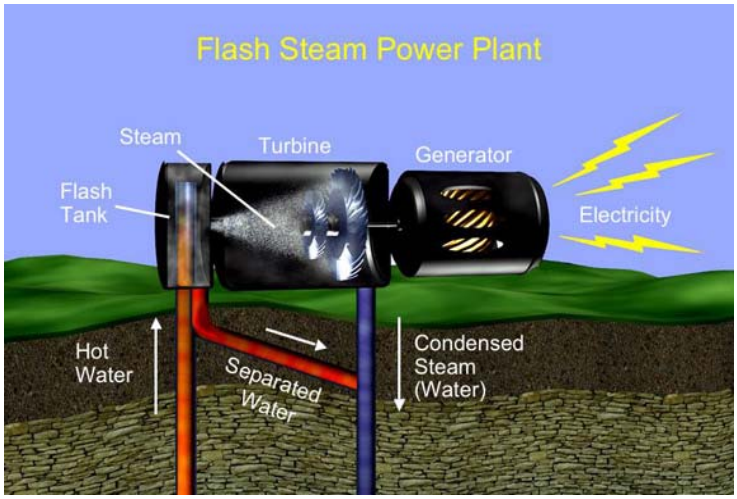


Pictures are used courtesy of the Geothermal Education Office in Tiburon, CA

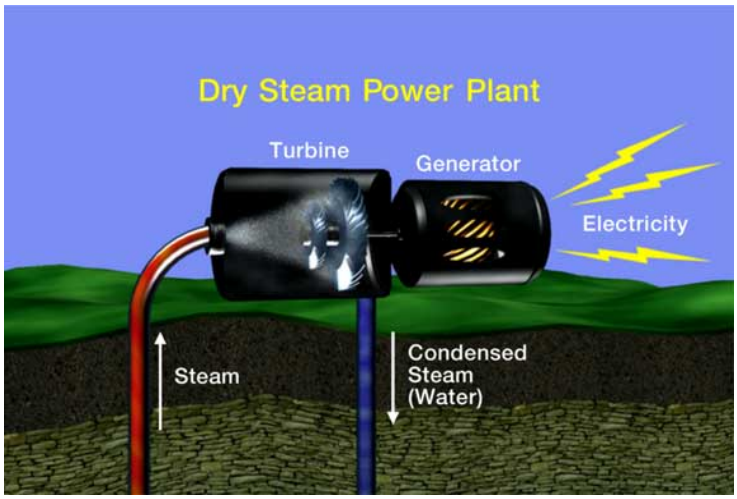
Three Primary Types of Geothermal Power Plants



Binary Power Plant
The heat from geothermal water sources are used to vaporize a "working fluid" in adjacent pipes. The steam-like vapors power a turbine generator. Binary plants use cooler geothermal resources. Recent advances in geothermal technology have made possible the economic production of electricity from geothermal resources lower than 150°C (302°F).



Flash Steam Power Plant
In flash plants, as hot water is released from the pressure of the deep reservoir into a flash tank, some of it "flashes" to steam. This steam is then used to power the generators. Flash plants use "hot" geothermal resources.



Dry Steam Power Plants
Dry steam geothermal fields are rare. In these geothermal resources, steam (and no water) shoots up the wells and is passed through a rock catcher and then directly into the turbine to power the generators. Dry steam plants use the hottest form of geothermal resources.

Pictures are used courtesy of the Geothermal Education Office in Tiburon, CA

OBJECTIVE, SCOPE, AND METHODOLOGY

Objective

The objectives for our evaluation were to determine (1) what royalty rates were actually paid by producing companies using the netback valuation method, (2) how these rates compared to the rates outlined in the EPA, and (3) what work MMS was doing to ensure the accuracy of reported data.

Scope

The scope of our evaluation covered geothermal activities performed by BLM and MMS. We limited our review to (1) companies paying royalties under the netback method, and (2) audit activities that occurred within the last 5 years. We excluded two companies currently under investigation.

Methodology

We conducted this evaluation in accordance with standards established by the President's Council on Integrity and Efficiency (PCIE), effective January 2005. To accomplish the evaluation objectives, we –

- reviewed DOI policies, procedures and handbooks to gain an understanding of the bureaus' geothermal program;
- interviewed appropriate BLM and MMS officials at the headquarters, state offices, and field office levels;
- visited select BLM sites to obtain an understanding of the geothermal program and obtain examples of lease activity documentation;
- visited select MMS sites to gain an understanding of the geothermal program and to review audits performed by MMS and the Controller of the State of California.
- obtained and analyzed data from producing geothermal companies, BLM, and MMS for the period June 2008 to June 2009. We used the data to calculate deduction percentages and the percentage of royalty rates actually paid. In addition, we looked for discrepancies in the data received from the different sources;
- obtained and analyzed audits performed by MMS and the Controller of the State of California to determine work performed on the allowability of deductions;

- non statistically selected two MMS audits (one from California and one from Nevada) that were completed within the last 5 years on companies that were using the netback method of calculating their royalties. We also non statistically selected one audit completed by the State of California Controller's Office completed within the last 5 years on a company that was using the netback method of calculating their royalties; and

- reviewed all companies using the netback method of calculating royalty rates except the two companies that are currently the subjects of an ongoing investigation. (*See Appendix 3: Company Universe.*)

COMPANY UNIVERSE

California

Company	Number of Producing Leases	Royalty Calculation Methodology
Coso Geothermal Holdings, LLC	2	Netback *
Geysers Power Company, LLC	8	Approved Alternative
HL Power Company	1	Approved Alternative
Heber Field Company	1	Approved Alternative
Mammoth Pacific, LP	2	Netback *
Northern California Power Agency	2	Approved Alternative
Ormesa, LLC	6	Netback *
Sliverado Geothermal Resources	2	Approved Alternative

Nevada

Company	Number of Producing Leases	Royalty Calculation Methodology
Amor 10-Soda Lake (Under Magma Energy Corp)	4	Netback #
AMP Resources (Stillwater)	2	Netback #
Beowawe Power, LLC	2	Netback *
Brady Power Partners	6	Netback *
Empire Energy, LLC	1	Netback *
Steamboat Hills, L.P.	2	Netback *
Terra-Gen Dixie Valley, LLC	4	Netback *

Utah

Company	Number of Producing Leases	Royalty Calculation Methodology
PacifiCorp Energy Fuel Resources	5	Approved Alternative

Scope of Evaluation

While there were a total of 16 companies holding 50 leases, our evaluation was limited to those companies using the netback method of calculating royalty rates.

* - We reviewed these eight companies' deduction rates and calculated the royalty rates actually paid during this evaluation.

- We excluded these two companies from our evaluation because they are the subject of an ongoing investigation.

EXAMPLES OF ALLOWABLE AND UNALLOWABLE DEDUCTIONS

Allowable Costs

- Direct wages and employee benefits (such as medical and retirement) paid to employees while engaged in the daily routine operation, maintenance or repair of the generating facility and transmission line.
- Payments to consultants or service companies for the daily routine operation, maintenance or repair of the generating facility and transmission line.
- Expenditures for supplies and miscellaneous replacement parts that are directly associated with normal operation and repair of the generating facility and transmission line.
- Shop tools necessary for the repair and maintenance of power conversion equipment.
- Expenditures for lubricants used in power plant equipment, such as turbine generators and cooling-water pumps.
- Expenditures for chemicals used in the power-generation process, including chemicals used for preventing or treating scale or corrosion of the turbine.
- That portion of operation and maintenance expenditures for down-hole well pumps, including costs of purchased electricity to run down-hole pumps necessary for the specific design requirements of the power conversion process.
- Costs of purchased electricity to operate the power plant.
- Fuel and other expenses for auxiliary generators.
- Insurance, ad valorem property taxes (limited to the property occupied by the power plant).
- Automotive equipment allocable to power plant operations.
- Office furniture and equipment (telephones, computers, chairs, desks, that are directly associated with the generating facility etc.)
- General administrative and corporate overhead costs (telephone service, office supplies, accounting and legal functions) that can be directly attributable and allocable to power plant operations.

Unallowable Costs

- State and Federal Income Taxes.
- Severance taxes.
- Royalty payments, including overriding royalty.
- Operation and maintenance expenses associated with effluent/condensate reinjection.
- Late payment fees for loan payments and other bills.
- Penalties for environmental violations.
- Legal Fees.
- Consulting Fees.
- Holiday Parties.
- Bonuses.
- Other corporate projects or costs not directly related to the routine operating and maintenance of the generating facility and transmission line.

UNIVERSE OF AUDITS CONDUCTED

Mineral Management Service

Company	Number of Leases Reviewed
Beowawe Power LLC	2
Brady Power Partners	6
Northern CA Power Agency	2
Ormesa, LLC	4
Steamboat Hills, LP	2
Terra-Gen Dixie Valley	4

California State Controller's Office

Company	Number of Leases Reviewed
Calpine Natural Gas LP/Calpine Geysers Company, LP	6
Coso Energy Developers	2
Geo East Mesa LTD Partnership	1
Griffin Resources	2
Mammoth Pacific, LP	1
Northern CA Power Agency	2
Ormesa, LLC	7
Silverado Geothermal Resources	3

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