

1.0 PURPOSE AND NEED OF THE PROPOSED ACTION

1.1 INTRODUCTION

The Bureau of Land Management (BLM), Winnemucca Field Office (WFO) has prepared this Programmatic Environmental Assessment (PEA) to analyze impacts to the human and natural environment from leasing geothermal resources.

Geothermal resources are hot water systems and occur where deep groundwater comes in contact with rock formations that are heated by a deep-seated heat source such as magma. The water serves as a medium by which the heat is transferred toward the Earth's surface. Hydrothermal minerals deposited in the rock pore spaces can create an impermeable cap rock, forming underground geothermal reservoir hot water trapped within rock formations. Where there is an opening in the rock cap, the heat and pressure causes the water to move towards the Earth's surface along fault lines. The hot water cools as it ascends along the fault, and discharges at the surface to form low to moderate temperature hot springs. Where hotter fluids reach the surface (i.e. Yellowstone National Park), fumaroles,¹ geysers, or boiling mud pots occur.

Mile-or-more-deep wells can be drilled into underground reservoirs to tap steam and very hot water. This geothermal energy would be used to turn the turbines that drive electric power generators. There are three types of electrical power generating plants operating today: dry steam plants (which use direct geothermal steam to turn turbines), flash steam plants (which pull deep, high-pressure hot water into lower-pressure tanks and use the resulting flashed steam to drive turbines), and binary-cycle plants (which pass moderately hot water by a secondary fluid with a much lower boiling point) this causes the secondary fluid to flash to steam, which then drives the turbines.

Direct use hot water near Earth's surface that is too cool for electrical power generation can be piped directly into facilities and used for other useful purposes such as: heating swimming pools and spas, heating buildings, growing plants in greenhouses, dehydrating vegetables, heating water for fish farming, and heating soil for crop production at cool-climate latitudes.

For more information on geothermal resources and energy development, visit the following Internet web sites:

www.eren.doe.gov/RE/geothermal.html
www.ngdc.noaa.gov/seg/geotherm.shtml
www.smu.edu/geothermal
www.geothermal.org

¹ A hole in a volcanic area from which hot smoke and gases escape.

1.2 LOCATION OF PROPOSED ACTION

The proposed action is located in a defined assessment area within the lands managed by the BLM WFO and the Dixie Valley Known Geothermal Resource Area (KGRA) located within the Carson City Field Office (CCFO) boundary (see Figure 2-1; for greater detail refer to [Appendix A](#)). The area is further divided into seven hydrographic regions:

- Northwest Region Hydrologic Basin²
- Black Rock Desert Region Hydrologic Basin
- Carson River Basin
- Humboldt River Hydrologic Basin
- West Central Region Hydrologic Basin
- Truckee Basin
- Central Region Hydrologic Basin

Assessment Area

Within the assessment area there are three categories of leasable lands: Prospectively Valuable Areas (PVAs)(also referred to as “Potentially Valuable Areas”), KGRAs (competitive leases), and pending lease application sites (noncompetitive leases)(for pending lease applications, see [Appendix H](#)).

Lands not included for leasing consideration and therefore not assessed under this action are any lands within Wilderness Areas, Wilderness Study Areas (WSAs), Areas of Critical Environmental Concern (ACECs), or National Conservation Areas. Also excluded are tribal lands, wildlife refuges, and private land with titles that include geothermal mineral rights.

1.3 HISTORY OF GEOTHERMAL LEASING BY THE WINNEMUCCA FIELD OFFICE

Geothermal leasing activity within the WFO peaked in the early to mid 1980s. Since then, leasing activity for geothermal resources has been relatively slow until the California energy crisis surfaced in 2000. Approximately 60 geothermal lease applications have been received in the past two years. In 2001, 16 lease applications were processed for low environmentally sensitive areas. There are currently 53 geothermal leases, 3 power plants, and 2 vegetable dehydration plants in operation within the WFO administrative boundary. The power plants are located at Brady Hot Springs, Desert Peak, and San Emidio Desert and range in generation capacity from 5.8 to 24 megawatts. The dehydration plants are located at Brady Hot Springs and San Emidio Desert. A 12-megawatt power plant is anticipated to be in production soon at the Rye Patch KGRA. Within the Dixie Valley KGRA, there is one geothermal power plant in operation.

Developing geothermal resources on BLM administered public lands involves four phases; leasing, exploration, development/operation and close-out. The first phase is to issue a lease.

² A Basin is defined as a geographic area drained by a single major stream or an area consisting of a drainage system comprised of streams and often natural or man-made lakes. Also referred to as Drainage Basin, Watershed, or Hydrographic Region. The U.S. Geological Survey and the Nevada Division of Water Resources, Department of Conservation and Natural Resources, have divided the state into discrete hydrologic units for water planning and management purposes.

Leasing of geothermal resources confers an implied right to the lessee to explore and or develop the geothermal resource. The act of leasing does not directly result in surface disturbance activities, however ground disturbance would occur during the second phase, exploration and phase three, development. Phase four, close-out, would involve removing facilities and reclaiming the site. The BLM would require a separate site-specific National Environmental Policy Act (NEPA)³ analysis for exploration, development/operation, and close-out phases.

Geothermal leases are usually issued for a ten-year period. Once a geothermal resource is developed within the lease area, the lease allows the lessee use of the resource for up to 40 years. Leases are issued through a competitive or non-competitive process. Competitive leases are offered through a bid process in areas identified as KGRAs. Non-competitive leases are issued for areas outside of KGRAs. Most lease applications are for a minimum of 640 acres. The BLM WFO has approximately 48 pending lease applications. BLM leasing authority is in accordance with the Geothermal Steam Act of 1970⁴ and associated regulations 43 Code of Federal Regulations (CFR) part 3200.

1.4 PURPOSE AND NEED

1.4.1 Purpose of the Proposed Action

In May 2001, the President adopted a National Energy Policy, to respond to our Nation's increasing energy needs. This policy recognizes the importance of how the federal government can affect the supply and use of energy. In response to the policy, the BLM developed an implementation strategy titled: *BLM Implementation of the National Energy Policy*. This plan identified a number of tasks that would streamline energy development on public lands. BLM, Nevada has received numerous applications to lease public lands for geothermal resources. A large number of these lease applications are located within the administrative boundary of the WFO.

To expedite processing of these pending lease applications and meet the intent of the National Energy Policy, the BLM WFO has prepared this geothermal PEA to satisfy requirements of the NEPA and the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA⁵, and to update the Winnemucca District Regional Geothermal EA for lands identified within the assessment areas.

1.4.2 Need for the Proposed Action

This action is pursuant to the National Energy Policy, Executive Order 13212, the BLM Implementation of the National Energy Policy, and to satisfy requirements of the Geothermal Steam Act of 1970 (30 U.S. Code (USC) §1001 *et seq.* as amended), and geothermal leasing regulations (43 CFR §3200) in order to meet the nation's increasing demand for energy.

³ National Environmental Policy Act (NEPA) of 1969 (P.L. 91-190 as amended (42 USC §4321 *et seq.*))

⁴ Geothermal Steam Act of 1970 (30 USC §1001 *et seq.* as amended)

⁵ 40 CFR §§1500-1508

1.5 DECISIONS TO BE MADE

In accordance with NEPA and the CEQ implementation regulations, and the geothermal leasing regulations (43 CFR 3200), the BLM has prepared this PEA for leasing all or some of the geothermal resources. The purpose of the PEA is to: 1) provide a broad scope analysis addressing the potential cumulative impacts of reasonably foreseeable geothermal development scenarios, 2) consider alternatives in the decision-making process, 3) determine whether a more detailed Environmental Impact Statement (EIS) is required, and 4) develop new stipulations and restrictions for new lease agreements. The decision would be implemented in the form of lease stipulations, lease notices, and conditions of approval for all new geothermal leases. The decision could also defer leasing geothermal resources in some areas. At the conclusion of the PEA process (unless sooner determined), the BLM must determine if the proposed action would cause significant environmental impacts. If not, then a Finding of No Significant Impact (FONSI) would be prepared. If it is determined that the proposed action would cause significant adverse environmental impacts, then the BLM would release a Notice of Intent (NOI) to prepare an EIS.

1.6 ISSUES

The BLM initiated a 30-day public scoping period from May 15, 2002 to June 14, 2002. In addition, two public scoping meetings were held on May 29, 2002 in Winnemucca, Nevada and May 30, 2002 in Lovelock, Nevada. Issues identified through public scoping and internal BLM staff review include the following;

Lands and Realty. Leasing creates a valid existing right, which could affect other future land-use authorizations.

Recreation. Soaking and swimming in natural hot spring pools is a popular recreation activity. Concerns of hot spring users include destruction or degradation of the hot springs. They do not want to be restricted or denied access to hot spring areas. Some believe that hot springs are spiritual places with healing powers.

Visual Resources. Visual resources could be adversely impacted by exploration or development phases. These phases could cause visual intrusions that adversely affect the setting of historic emigrant trails and other sensitive visual resource areas through the construction of roads, wells, ponds, power plants, warehouses, pipelines, and ancillary facilities.

Wildlife. Loss of habitat from reasonably foreseeable development scenarios could adversely impact sage grouse, big horn sheep, mule deer, and antelope populations.

Sensitive Species. Hot spring surface features include pools, mineral deposits, outflows, and other unique habitat features. Loss of habitat from reasonably foreseeable development scenarios could adversely impact sensitive plant and wildlife species.

Wild Horses and Burros. Wild horses and burros could be adversely impacted through displacement, habitat loss, and human disturbance, as well as decreased water supply/sources.

Cultural Resources. Exploration or development phases could also destroy cultural resources or National Register Eligible sites through indirect impacts caused from construction of facilities and removal of vegetation, which could damage or expose previously hidden cultural resources.

Native American. Native American Religious concerns include loss or destruction of surface hot springs, which have spiritual importance or are areas of traditional uses such as healing, and loss or destruction of culturally significant sites.

1.7 RELATIONSHIP TO BLM AND NON-BLM POLICIES, PLANS, AND PROGRAMS

1.7.1 Land Use Conformance Statement

The proposed action and alternative are in conformance with the Paradise-Denio and Sonoma-Gerlach Management Framework Plans (MFPs), and are consistent with Federal, State and local laws, regulations, and plans to the maximum extent possible. Objective M-5 of the Sonoma-Gerlach MFP states, “Make energy resources available on all public lands and other lands containing federally owned minerals.” Objective M-6 of the Paradise-Denio MFP states, “Make energy available on all public lands, on a managed and controlled basis, consistent with national energy policies and demands.” Lands within the WFO administrative boundary are open for geothermal leasing subject to certain restrictions and stipulations as defined in the associated MFP decisions. Applicable existing and new stipulations are attached as part of this PEA (see [Appendix G](#)).

1.7.2 Permits and Authorizing Actions

Prior to implementing exploration or development activities, the lessee must secure additional permits or modify existing permits from BLM (see Table 1-1). Other Federal, State, and local permits would be required prior to each phase of the reasonably foreseeable development scenario. A site-specific NEPA analysis would be required for all BLM permits.

**TABLE 1-1
BLM PERMITS AND AUTHORIZING ACTIONS**

Authorizing Action	Regulatory Agency
Issue Lease	DOI – BLM
Reasonable Foreseeable Development Scenarios <ul style="list-style-type: none">• Exploration Permits (Exploration Operations Permit and Application for Permit to Drill (APD))• Permit for Development and Production (Plan of Utilization)	DOI – BLM

