

US EPA ARCHIVE DOCUMENT



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105**

February 13, 2012

Keith Whaley, Project Manager
Humboldt-Toiyabe National Forest
Bridgeport Ranger District
HC 62 Box 1000
Bridgeport, California 93517

Subject: Draft Environmental Impact Statement for Geothermal Leasing on the Humboldt-Toiyabe National Forest, to Facilitate the Development and Production of Geothermal Energy, Ely, Austin, Tonopah and Bridgeport Ranger Districts, Nevada (CEQ# 20110431)

Dear Mr. Whaley:

The U.S. Environmental Protection Agency has reviewed the Draft Environmental Impact Statement for Geothermal Leasing on the Humboldt-Toiyabe National Forest in Nevada. Our comments are provided pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508) and our NEPA review authority under Section 309 of the Clean Air Act.

EPA supports increasing the development of renewable energy resources in an expeditious and well planned manner. Using renewable energy resources such as geothermal energy can help the nation meet its energy requirements while minimizing the generation of greenhouse gases. While renewable energy facilities offer many environmental benefits, they are not without the potential for adverse impacts. Appropriate siting and design of such facilities is of paramount importance if the nation is to make optimum use of its renewable energy resources without unnecessarily depleting or degrading its water resources, wildlife habitats, recreational opportunities, and scenic vistas.

We have rated all alternatives in the DEIS as Environmental Concerns – Insufficient Information (EC-2) (see enclosed “*Summary of EPA Rating Definitions*”). The EPA recommends the Final EIS include additional analysis, and, as appropriate, mitigation measures for the potential impacts to water resources and air quality. Additionally, we recommend the FEIS include detailed procedures for further NEPA analysis of subsequent site specific projects, including analysis of, and mitigation for, climate change impacts. Our enclosed detailed comments provide additional information regarding these concerns and recommendations.

We appreciate the opportunity to review this DEIS and are available to discuss our comments. Please send one hard copy and one CD ROM copy of the FEIS to this office at the same time it is officially filed with our Washington D.C. Office. If you have any questions, please contact me at (415) 972-3521, or contact Scott Sysum, the lead reviewer for this project, at (415) 972-3742 or sysum.scott@epa.gov.

Sincerely,

/s/

Kathleen Martyn Goforth, Manager
Environmental Review Office
Communities and Ecosystems Division

Enclosures:

- (1) Summary of EPA Rating Definitions
- (2) EPA's Detailed Comments

cc: Mr. Chris McAlear, District Manager
Bureau of Land Management, Carson City Field Office

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement.

ENVIRONMENTAL IMPACT OF THE ACTION

“LO” (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

“EC” (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

“EO” (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

“EU” (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. The EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality.

ADEQUACY OF THE IMPACT STATEMENT

Category “1” (Adequate)

The EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category “2” (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category “3” (Inadequate)

The EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

US EPA DETAILED COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR GEOTHERMAL LEASING ON THE HUMBOLDT-TOIYABE NATIONAL FOREST, TO FACILITATE THE DEVELOPMENT AND PRODUCTION OF GEOTHERMAL ENERGY, ELY, AUSTIN, TONOPAH AND BRIDGEPORT RANGER DISTRICTS, NEVADA, FEBRUARY 13, 2012

Water Supplies

Public drinking water supplies and/or their source areas exist in many watersheds. Source water is water from streams, rivers, lakes, springs, and aquifers that is used as a supply of drinking water. Source water areas are delineated and mapped by the State for each federally-regulated public water system. The 1996 amendments to the Safe Drinking Water Act require federal agencies to protect sources of drinking water for communities. The Draft Environmental Impact Statement states that potential impacts from geothermal resource development to either surface water or groundwater would be reduced through site specific analysis and development of mitigation or protection measures for future projects as well as implementation of Best Management Practices. In addition, implementation of the stipulations outlined in Appendix A would reduce impacts on water resources (p. 4 -32). The DEIS does not discuss whether or not any source waters are located within the leasing area. Without this information, EPA is unable to fully assess the potential environmental impacts of the project and the adequacy of any mitigation measures to protect such waters.

Recommendation:

The Final EIS should identify:

- Any source water protection areas within the leasing areas.
- All activities that could potentially affect source water areas.
- Potential contaminants that may result from the expected exploration and geothermal development that could impact source water protection areas.
- Measures that would be taken to protect the source water protection areas.

Tiering and "Programmatic Like" Analysis

The DEIS distinguishes the process set forth in the document as a separate process from the Bureau of Land Management and Forest Service Programmatic Environmental Impact Statement for Geothermal Leasing in the Western United States, 2008¹; however, it states that this EIS will tier to and incorporate by reference those elements of the 2008 Geothermal PEIS that are appropriate for such use (e.g., resource impact analysis, stipulations, leasing procedures, and BMPs). The intent of this DEIS is to determine if the lands are administratively open for leasing, describe the Reasonably Foreseeable Development Scenarios for the planning area, examine the existing environmental setting, and describe the potential direct, indirect, and cumulative impacts that issuing leases, and the anticipated future actions following leasing, would have on the human and natural environment (p. 1-17).

¹ Bureau of Land Management and Forest Service. 2008. Programmatic Environmental Impact Statement for Geothermal Leasing in the Western United States.

Chapter 4 of the DEIS analyzes the environmental consequences of impacts expected to result from future actions. The DEIS states that the scope of the analysis is commensurate with the detail of the alternatives and the availability of data, and is at a programmatic level as discussed in Section 1.8, Scope of Analysis (p. 4-1). Details regarding site specific projects are not included in the DEIS as no geothermal leases or specific projects have been proposed to date. At various sections in Chapter 4, it is stated that subsequent site specific proposals or projects would undergo National Environmental Policy Act review, though details are lacking.

The DEIS does not describe the process that would be used to determine the level of subsequent NEPA analysis, nor does it identify the mechanism, screening criteria, or thresholds that would be used to make these determinations.

Recommendations:

The FEIS should clarify in Section 1.8, Scope of Analysis, that all lease stipulations and Best Management Practices from the 2008 Geothermal PEIS still apply. Further, the FEIS should clarify that any subsequent site specific geothermal exploration or development projects would require further environmental analysis, which could be conducted through either an environmental assessment or an EIS that could tier to the subject FEIS and the 2008 Geothermal PEIS.

The FS and BLM should elaborate on the process that individual offices will use to determine whether an EA or EIS will be prepared for subsequent projects, and identify the mechanism, screening criteria, and/or thresholds that would be used to make these decisions. We recommend that consistent standards for determining the appropriate level of NEPA review for individual projects be identified and implemented to ensure that all impacts are consistently identified and disclosed to decision-makers.

Stipulations, Best Management Practices, and Procedures

The lease stipulations, BMPs, and procedures described in Section 2.2 would be applied, as appropriate, to any future leases in the decision area, and incorporated, as appropriate, into permits or Conditions of Approval. The stipulations, BMPs, and procedures include those developed as part of the 2008 Geothermal PEIS as well as through the assessment process of the subject DEIS (p. 2-2).

The California Renewable Energy Action Team, as part of its Desert Renewable Energy Conservation Plan development process has also developed BMPs for low impact renewable energy development on desert lands, as well as specific BMPs for geothermal projects². Additionally the International Energy Agency has produced a handbook on the best practices for geothermal drilling³.

² Renewable Energy Action Team (California Energy Commission, California Department of Fish and Game, U.S. Department of Interior Bureau of Land Management and Fish and Wildlife Service). Best Management Practices and Guidance Manual: Desert Renewable Energy Projects. California Energy Commission, Siting, Transmission and Environmental Protection Division. REAT-1000-2010-009F.

³ Sandia National Laboratories for the IEA, Handbook of Best Practices for Geothermal Drilling, SAND2010-6048

Recommendation:

The FEIS should include the Renewable Energy Action Team Desert Renewable Energy Projects BMPs and the International Energy Agency Handbook of Best Practices for Geothermal Drilling as sources of BMPs that could be incorporated, as appropriate, into new leases, associated permits and Conditions of Approval.

Biological Resources, Habitat and Wildlife

Many of the proposed activities that would follow from the leasing decision would result in vegetation being cleared and soils moved during the construction of roads, well pads, pipelines, transmission lines, substations, power plants and other facilities. Such activities could adversely affect raptors or their habitats, which are known to occur in the vicinity of the decision area (p. 3-51).

All raptor and owl species are protected under the Migratory Bird Treaty Act. The golden eagle and bald eagle also receive protection under the Bald and Golden Eagle Protection Act. In September 2009, the U.S. Fish and Wildlife Service finalized permit regulations under the BGEPA for the take of bald and golden eagles on a limited basis, provided that the take is compatible with preservation of the eagle and cannot be practicably avoided. The final rule states that if advanced conservation practices can be developed to significantly reduce take, the operator of a facility may qualify for a programmatic take permit. Most permits under the new regulations would authorize *disturbance*, rather than take. Projects or activities that could impact golden or bald eagles may require the preparation of an Eagle Conservation Plan.

The BLM has recently issued Greater Sage-Grouse Conservation Guidance in the form of two Instructional Memoranda (IM No. 2012-043 and IM No. 2012-044) that are designed to guide both immediate and longer-term conservation actions aimed at conserving the greater sage-grouse and its sagebrush habitat in 10 western states, including Nevada.

Recommendations:

Work with the U.S. Fish and Wildlife Service to ensure that requirements regarding the protection of eagles and other raptors are appropriately addressed in the FEIS.

Consider incorporating appropriate actions and management strategies included in the BLM's Greater Sage Grouse IMs into the FEIS as measures to be applied to all site specific projects resulting from the leasing decision.

Climate Change

Emissions of carbon dioxide and other heat-trapping gases are affecting weather patterns, sea level, ocean acidification, chemical reaction rates, and precipitation rates, resulting in climate change. One report predicts that, by 2100, the average temperatures for Nevada are expected to increase by 3-4° F in the spring and fall and by 5-6° F in the summer and winter⁴. In general, Nevada is expected to have

⁴ United States Environmental Protection Agency. 1998. Climate Change and Nevada. Climate and Policy Assessment

wetter winters and more arid summers as the subtropical dry zones for the whole planet are projected to increase. Higher temperatures and increased winter rainfall will be accompanied by a reduction in snow pack, earlier snowmelts, and increased runoff.⁵ The DEIS includes a good discussion of the projected impacts of climate change on the area being considered for leasing (p. 3-110). Some of the predictions, such as reduced groundwater discharge, and more frequent and severe drought conditions, may impact subsequent site specific projects.

Recommendations:

The FEIS should discuss the potential impact of climate change on the effectiveness of proposed BMPs, lease stipulations and mitigation measures.

The NEPA analysis for each subsequent site specific project should discuss the potential impact of climate change on that project, and incorporate mitigation measures, as appropriate. The NEPA analyses for subsequent site specific projects should also assess how the projected impacts of each individual project could be exacerbated by climate change.

National Ambient Air Quality Standards and Particulate Matter

The DEIS describes the ambient air quality but does not estimate air emissions from the anticipated operations or facilities. The DEIS states that the nature and extent of geothermal-related development activities that would affect air quality would vary by project, depending on several factors: 1) whether the project is for direct use or indirect use; 2) the size of the project; and 3) for indirect projects, which type of power plant technology is used. Potential air quality impacts would be evaluated on a project-specific basis, as NEPA would be conducted for each of the potential phases of geothermal development activity: exploration, drilling operations, utilization, and reclamation and abandonment. Air permits would also be obtained, as necessary, for each individual phase, and activities at all sites would need to be carried out in conformance with the applicable state implementation plans (p. 4-35).

The leasing stage presents an ideal opportunity to disclose and analyze the potential impacts from past and future resource development in the project area and nearby vicinity. We note the DEIS includes a reasonably foreseeable development scenario which estimated a range of future production and exploration wells (p. 2-14). Despite the inclusion of this RFD, an emissions inventory was not prepared. While the area proposed for development is currently in attainment for all NAAQS, an emissions inventory at this stage will help inform the expected geothermal project-level analyses as well as a cumulative impacts analysis for projects in the area.

Recommendations:

Quantify, for each alternative in the FEIS, emissions of criteria pollutants and volatile organic compounds based on the number of reasonably foreseeable production and exploration wells.

Division (2174), USEPA.

⁵ The Center for Integrative Environmental Research (CIER) at the University of Maryland. 2008. Economic Impacts of Climate Change on Nevada.

Discuss, for each alternative, impacts to air quality related values for each Class I area, and sensitive Class II areas, as well as non-attainment areas in proximity to the project area.

The EPA recommends the FEIS include the following measures, as requirements for future projects, to reduce emissions of criteria air pollutants and hazardous air pollutants (air toxics).

- *Construction Emissions Mitigation Plan* – The FEIS should include a firm commitment to a Construction Emissions Mitigation Plan for any future projects in the decision area. In addition to all applicable local, state, or federal requirements, the EPA recommends that the following mitigation measures be included in the Construction Emissions Mitigation Plan in order to reduce impacts associated with emissions of particulate matter and other toxics from construction-related activities:
 - Stabilize heavily used unpaved construction roads with a non-toxic soil stabilizer or soil weighting agent that will not result in loss of vegetation, or increase other environmental impacts.
 - During grading, use water, as necessary, on disturbed areas in construction sites to control visible plumes.
 - Vehicle Speed
 - ◆ Limit speeds to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.
 - ◆ Limit speeds to 10 miles per hour or less on unpaved areas within construction sites on unstabilized (and unpaved) roads.
 - ◆ Post visible speed limit signs at construction site entrances.
 - Inspect and wash construction equipment vehicle tires, as necessary, so they are free of dirt before entering paved roadways, if applicable.
 - Provide gravel ramps of at least 20 feet in length at tire washing/cleaning stations, and ensure construction vehicles exit construction sites through treated entrance roadways, unless an alternative route has been approved by appropriate lead agencies, if applicable.
 - Use sandbags or equivalent effective measures to prevent run-off to roadways in construction areas adjacent to paved roadways. Ensure consistency with the project's Storm Water Pollution Prevention Plan, if such a plan is required for the project
 - Sweep the first 500 feet of paved roads exiting construction sites, other unpaved roads en route from the construction site, or construction staging areas whenever dirt or runoff from construction activity is visible on paved roads, or at least twice daily (less during periods of precipitation).
 - Stabilize disturbed soils (after active construction activities are completed) with a non-toxic soil stabilizer, soil weighting agent, or other approved soil stabilizing method.
- *Fugitive Dust Source Controls*: Identify the need for a Fugitive Dust Control Plan. We recommend that the plan include these general commitments:
 - Stabilize heavily used unpaved construction roads with a non-toxic soil stabilizer or soil weighting agent that will not result in loss of vegetation, or increase other environmental impacts.
 - During grading, use water, as necessary, on disturbed areas in construction sites to control visible plumes.
 - Vehicle Speed
 - ◆ Limit speeds to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.
 - ◆ Limit speeds to 10 miles per hour or less on unpaved areas within construction sites on unstabilized (and unpaved) roads.
 - ◆ Post visible speed limit signs at construction site entrances.
 - Inspect and wash construction equipment vehicle tires, as necessary, so they are free of dirt before entering paved roadways, if applicable.
 - Provide gravel ramps of at least 20 feet in length at tire washing/cleaning stations, and ensure construction vehicles exit construction sites through treated entrance roadways, unless an alternative route has been approved by appropriate lead agencies, if applicable.
 - Use sandbags or equivalent effective measures to prevent run-off to roadways in construction areas adjacent to paved roadways. Ensure consistency with the project's Storm Water Pollution Prevention Plan, if such a plan is required for the project
 - Sweep the first 500 feet of paved roads exiting construction sites, other unpaved roads en route from the construction site, or construction staging areas whenever dirt or runoff from construction activity is visible on paved roads, or at least twice daily (less during periods of precipitation).
 - Stabilize disturbed soils (after active construction activities are completed) with a non-toxic soil stabilizer, soil weighting agent, or other approved soil stabilizing method.

- Cover or treat soil storage piles with appropriate dust suppressant compounds and disturbed areas that remain inactive for longer than 10 days. Provide vehicles (used to transport solid bulk material on public roadways and that have potential to cause visible emissions) with covers. Alternatively, sufficiently wet and load materials onto the trucks in a manner to provide at least one foot of freeboard.
- Use wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) where soils are disturbed in construction, access and maintenance routes, and materials stock pile areas. Keep related windbreaks in place until the soil is stabilized or permanently covered with vegetation.
- *Administrative controls:*
 - Develop a construction traffic and parking management plan that maintains traffic flow and plan construction to minimize vehicle trips.
 - Identify any sensitive receptors in the project area, such as children, elderly, and the infirm, and specify the means by which impacts to these populations will be minimized (e.g. locate construction equipment and staging zones away from sensitive receptors and building air intakes).
 - Include provisions for monitoring fugitive dust in the fugitive dust control plan and initiate increased mitigation measures to abate any visible dust plumes.

Emergency Planning and Community Right to Know Act, CAA §112(r), and Nevada Chemical Accident Prevention Program

The 2008 Geothermal PEIS provides a list of hazardous materials routinely found at geothermal plants. In particular, binary plants typically use a flammable organic compound as the working fluid for the power plants. Hydrogen sulfide is a potential toxic gaseous pollutant that could be released during drilling, maintenance or as the result of an accident. The geothermal power plants will have to comply with CAA §112(r), and, as applicable, EPCRA § 303, 311, & 312, and the Nevada Chemical Accident Prevention Program. Additionally, since the establishment of the Emergency Planning and Community Right-to-Know Act in 1986, the county's Local Emergency Planning Committee can require a facility to produce an emergency response plan whether or not it is required under other regulations. Nevada's LEPCs are currently set up at the county level.

Recommendation:

The FEIS should discuss compliance with CAA §112(r), EPCRA §§ 303, 311, & 312 and the Nevada Chemical Accident Prevention Program, as applicable.