

**United States Department of the Interior
Bureau of Land Management**

**United States Department of Agriculture
Forest Service**

Great Basin Unified Air Pollution Control District

CASA DIABLO IV GEOTHERMAL DEVELOPMENT PROJECT

PUBLIC DRAFT

JOINT ENVIRONMENTAL IMPACT STATEMENT AND ENVIRONMENTAL IMPACT REPORT



November 2012

DOI Control #: DES 12-21

Publication Index #: BLM/CA-ES-2013-002+1793

State Clearinghouse No. 2011041008



United States Department of the Interior
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Great Basin Unified Air Pollution Control District

Public Draft
Joint Environmental Impact Statement
and Environmental Impact Report
for the
Casa Diablo IV Geothermal
Development Project

For the

BLM, Bishop Field Office
US Forest Service, Inyo National Forest
and
Great Basin Unified Air Pollution Control District
Bishop, California

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United States Department of the Interior



BUREAU OF LAND MANAGEMENT

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Bishop, California 93514
www.blm.gov/ca/bishop

November 16, 2012

Casa Diablo IV Project
Draft EIS/EIR
(CA-170.60) P

Dear Reader:

I am pleased to announce the availability of the Joint Draft Environmental Impact Statement (EIS) and Environmental Impact Report (EIR) for the Casa Diablo IV (CD-IV) Geothermal Development Project. ORNI 50 LLC, a wholly-owned subsidiary of Ormat Nevada Inc., (the Applicant) proposes to construct, operate, maintain and decommission a 33 megawatt (MW) geothermal power generating facility and related infrastructure near Mammoth Lakes in Mono County, California.

The enclosed Joint Draft EIS/EIR analyzes four alternatives, including: (1) the Proposed Project; (2) an alternative plant site, located east of the existing Casa Diablo geothermal complex; (3) a modified pipeline alignment; and (4) taking No Action.

The Joint Draft EIS/EIR has been prepared in accordance with the National Environmental Policy Act of 1969, as amended (NEPA); the Federal Land Policy and Management Act of 1976, as amended; and the California Environmental Quality Act of 1970 (CEQA). The document has been sent to members of the public who requested a copy and to pertinent local, state, tribal, and federal government entities.

To initiate the environmental review process under the NEPA, the Applicant submitted an application to the BLM to construct, operate, and following the expected 30-year useful life, decommission the CD-IV Project¹. In addition to the BLM permit, the CD-IV Project requires discretionary permits from the United States Forest Service (USFS), Inyo National Forest, and the Great Basin Unified Air Pollution Control District (GBUAPCD). The BLM is the lead federal agency under the NEPA and the USFS is a cooperating federal agency; the GBUAPCD is the lead state agency for review under the CEQA.

The Joint Draft EIS/ EIR will be circulated for a 60-day public comment period. All comments must be postmarked no later than 60 days from the date the Notice of Availability for the Joint Draft EIS/EIR is published in the Federal Register by the Environmental Protection Agency. A 60-day comment period is being provided due to the comment period coinciding with the upcoming holiday season. Written comments may be submitted to Collin Reinhardt, Project Manager, by mail: BLM, Bishop Field Office, 351 Pacu Lane, Suite 100, Bishop, CA 93514; Attn: Casa Diablo IV Geothermal Development Project

¹ The Applicant's initial application was filed on February 17, 2010 by Mammoth Pacific, L.P. (MPLP). Since then, MPLP was acquired by Ormat Nevada Inc., which formed a wholly owned subsidiary (ORNI 50, LLC) for the CD-IV Project. ORNI 50, LLC submitted a revised application to BLM in June 2012.

Draft EIS/EIR; by e-mail: cabipubcom@ca.blm.gov; Subject Casa Diablo IV Geothermal Development Project Draft EIS/EIR; or by fax: 760-872-5050. Oral comments may be submitted to Margie DeRose via telephone at 760-873-2424 or in person to Margie DeRose at the Inyo National Forest, Supervisor's Office, 351 Pacu Lane, Suite 200, Bishop, CA 93514. All substantive issues raised during the comment period will be considered, and modifications based on these comments may be made to develop the Final EIS/EIR.

The Draft EIS/EIR may be reviewed at the BLM Bishop Field Office and the Town of Mammoth Lakes Public Library. Additionally, CD-ROM versions of the Draft EIS/EIR may be obtained by contacting the Bishop Field Office. The document also will be available on the Internet at:

<http://www.blm.gov/ca/st/en/fo/bishop.html>. Informational public meetings will be held in Mammoth Lakes and Crowley Lake, California. Please see BLM's web page at

<http://www.blm.gov/ca/st/en/fo/bishop.html> for information about the location, date, and time of these meetings.

We are pleased to provide this copy of the Joint Draft EIS/EIR for your review and extend our appreciation for your cooperation and assistance during this process. We look forward to your continued participation.

Sincerely,

/s/ Bernadette Lovato

Bernadette Lovato
Bishop Field Manager

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EXECUTIVE SUMMARY

ES.1 Background and Project Overview

ORNI 50 LLC, a wholly-owned subsidiary of Ormat Nevada Inc., (the Applicant) proposes to construct, operate, maintain and decommission a 33 net megawatt (MW) geothermal power generating facility and related infrastructure in Mono County, California, to be known as the Casa Diablo IV Geothermal Development Project (CD-IV Project). The majority of the CD-IV Project would be developed on National Forest System Lands where the surface resources are managed by the United States Forest Service (USFS), Inyo National Forest and the mineral resources are managed by the Bureau of Land Management (BLM), Bishop Field Office. The CD-IV Project would generate and deliver geothermal-generated power to the California electrical grid through an interconnection at the Southern California Edison (SCE) Substation, thereby supporting California and the nation's mission to reduce dependency on fossil fuels.

To initiate the environmental review process under the National Environmental Policy Act (NEPA), the Applicant submitted an application to the BLM to construct, operate, and following the expected 30-year useful life, decommission the CD-IV Project¹. In addition to the BLM permit, the CD-IV Project requires discretionary permits from the United States Forest Service (USFS), Inyo National Forest, and the Great Basin Unified Air Pollution Control District (GBUAPCD). BLM is the lead agency under NEPA and USFS is a cooperating agency; GBUAPCD is the lead agency for review under the California Environmental Quality Act (CEQA).

The CD-IV Project would be located in the vicinity of the existing Mammoth Pacific L.P. (MPLP) geothermal complex located within the Mono-Long Valley Known Geothermal Resource Area (KGRA) near the town of Mammoth Lakes in Mono County, California. The CD-IV Project would construct a new 33 net MW binary power plant, develop an expanded geothermal well field of up to 16 geothermal resource wells, construct pipelines to bring the geothermal brine to the power plant and pipelines to take the cooled brine to injection wells, and install an electric transmission line to interconnect to the Southern California Edison (SCE) Substation at Substation Road.

¹ The Applicant's initial application was filed on February 17, 2010 by Mammoth Pacific, L.P. (MPLP). Since then, MPLP was acquired by Ormat Nevada Inc., which formed a wholly owned subsidiary (ORNI 50, LLC) for the CD-IV Project. ORNI 50, LLC submitted a revised application to BLM in June 2012.

ES.2 Agency Roles, Permits, and Decisions

This EIS/EIR has been jointly prepared by three agencies. The lead federal agency is the BLM, Bishop Field Office, with the USFS, Inyo National Forest as a cooperating federal agency. The California State lead agency is the GBUAPCD. The EIS/EIR will inform each agency's decision making process. The roles, permits, and decisions of each agency are:

1. **BLM:** The BLM is the managing agency for subsurface mineral estate including geothermal resources. In order for the Applicant to proceed with construction and operation of the CD-IV Project, the BLM must approve its Application for Geothermal Drilling, Commercial use, Site License and Construction Permit which was submitted February 17, 2010 and revised June 5, 2012. The BLM may issue a Record of Decision (ROD) to approve, approve with conditions, or deny the application filed by the Applicant.
2. **USFS:** The USFS manages the surface lands in the proposed project area. The CD-IV Project requires the use of National Forest System Roads (NFSR) under the jurisdiction of USFS, unauthorized roads that have been created by users, and new roads for access to the individual wells. The USFS has the discretion to issue authorization (via a special use permit) for the commercial use of these roads. Authorizations required may include specifying access routes, permitting administrative access authorizations, and road construction and maintenance requirements. Any unauthorized road utilized by the Project would be added to the National Forest Road System. The USFS Inyo National Forest will use this analysis and EIS to decide whether to approve a Special Use Authorization permit to allow for use of existing roads, construction of new access roads, maintenance of all access roads (including winter plowing), and construction of a transmission line. The USFS will issue its own ROD, separate from the BLM ROD.
3. **GBUAPCD:** The GBUAPCD is the lead agency for compliance with CEQA. The GBUAPCD is responsible for reviewing applications and issuing air permits within the basin. The GBUAPCD's decision will be whether to approve, approve with conditions, or deny an air permit for the CD-IV Project.

ES.3 NEPA Purpose and Need and CEQA Project Objectives

ES.3.1 NEPA Purpose and Need

In accordance with the Federal Land Policy and Management Act (FLPMA) (Section 103(c)), public lands are to be managed for multiple use, including a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and non-renewable resources. Taking into account the multiple use mandate, the purpose for and need for the federal action is to respond to an application submitted by ORNI 50, LLC requesting authorization to construct, operate and decommission the Casa Diablo IV Project (Proposed Action) including commercial geothermal power generation facilities, wells, pipelines, and associated infrastructure for BLM Geothermal Leases CACA-11667, CACA-14407, CACA-14408 and CACA-11672.

The BLM will decide whether to approve, approve with modifications, or deny the application filed by ORNI 50, LLC. Federal response to the application will include consideration of how the CD-IV Project would comply with various federal policies, including the Geothermal Steam Act of 1970, which provides statutory guidance for geothermal leasing and permitting of leasehold operations by the BLM and Geothermal Resource regulations (43 CFR 3200). In addition, the USFS will decide whether to approve or deny the issuance of a Special Use Authorization permit to allow for use of existing roads, construction of new access roads, maintenance of all access roads (including winter plowing), and construction of a transmission line on Inyo National Forest managed lands.

ES.3.2 CEQA Objectives

The objectives of the CD-IV Project are to develop the geothermal resources within the BLM-issued geothermal leases at Casa Diablo to produce commercially viable electricity from clean and renewable resources. As described below, this would support California's goals for reducing greenhouse gas (GHG) emissions and dependency on fossil fuels.

California's Renewables Portfolio Standard (RPS) program requires investor-owned utilities, electric service providers, and community choice aggregators to increase their procurement of eligible renewable-energy resources to 33 percent of total procurement by 2020. The California RPS was established in 2002 under Senate Bill 1078, accelerated in 2006 under Senate Bill 107, and expanded in 2011 under Senate Bill 2X (CPUC, 2012).

Additionally, in 2006, California adopted the Global Warming Solutions Act of 2006 (Assembly Bill 32), which set the goal of reducing statewide GHG emissions to 1990 levels by 2020 into law. It directed the California Air Resources Board (CARB) to begin developing discrete early actions to reduce greenhouse gases while also preparing a scoping plan to identify how best to reach the 2020 limit. The Climate Change Scoping Plan was originally approved by CARB in 2008, and re-approved on August 24, 2011. One of the key GHG reduction measures in this scoping plan was to increase the RPS from 20 percent by 2010 to 33 percent by 2020. The scoping document says that "increased use of renewables will decrease California's reliance on fossil fuels, thus reducing emissions of greenhouse gases from the electricity sector" (CARB, 2008).

ES.4 Proposed Action and Alternatives

The **Proposed Action** would consist of the following facilities:

1. A geothermal power plant consisting of two (2) Ormat Energy Converter (OEC) binary generating units (21.2 MW gross each) with vaporizers, turbines, generators, air-cooled condensers, preheaters, pumps and piping, and related ancillary equipment. The gross power generation of the CD-IV plant would be 42.4 MW. The estimated auxiliary and parasitic loads (power used within the project for circulation pumps, fans, well pumps, loss in transformers and cables) is about 9.4 MW, thus providing a net power output of about 33 MW. Additional components of the power plant would include:

- a) A motive fluid system consisting of motive fluid (n-pentane) storage vessels (either one or two vessels in the range of 9,000 to 12,000 gallons) and motive fluid vapor recovery systems (VRUs). Each VRU would consist of a diaphragm pump and a vacuum pump.
 - b) A new substation would be constructed on the power plant site and would be connected to the SCE Casa Diablo Substation at Substation Road.
 - c) An overhead 33 kV transmission line connecting the power plant substation with the SCE Casa Diablo Substation approximately 650 feet (198 meters) long.
2. Up to 16 geothermal wells are proposed. Fourteen of the wells would be located in the Basalt Canyon Area and two wells would be located southeast of the proposed power plant east of U.S. Highway 395. The specific locations for these wells would be selected out of the 18 possible locations shown in Figure 2-2. The actual number may be less depending on the productivity of the wells. The final number and location of wells would be determined by modeling and actual drilling results. Approximately half of the wells would be production wells and the other half would be injection wells. Each production well would range in depth from 1,600 to 2,000 feet below ground surface (bgs), and each new injection well would be drilled to approximately 2,500 feet bgs. Production wells would be equipped with a down-hole pump powered by a surface electric motor. Most of the well sites in Basalt Canyon have been analyzed previously for the development of exploratory wells, two of which were drilled in 2011. Additional detail is provided in Section 2.2.4.
 3. Piping would extend from production wells to the power plant and from the power plant to the individual injection wells. Two main pipelines would parallel the existing Basalt Canyon pipeline and would cross beneath U.S. Highway 395 between the wellfield and the CD-IV power plant site. Where pipelines must cross another pipeline or a road, the crossings would be underground.
 4. Power and control cables for the wells would be installed in above-ground cable trays placed on the pipeline supports. Appurtenant facilities include pumps, tanks, valves, controls, and flow monitoring equipment.

Alternative 2, Plant Site Alternative, would locate the CD-IV power plant and related facilities to the east of the existing MPLP geothermal complex power plant facilities. Geothermal production and injection pipelines to Basalt Canyon would be the same as the Proposed Action west of Highway 395. East of Highway 395, the pipelines would proceed east under this Alternative (rather than north as under the Proposed Action) to the Alternative Plant Site. Where pipelines must cross another pipeline, the crossings would be underground. Power plant and wellfield construction, operation and decommissioning would be the same as the Proposed Action.

Alternative 3, Modified Pipeline Alternative, modifies the geothermal production and injection pipeline alignments in Basalt Canyon, slightly alters the location of proposed well 26-30, and places pipeline crossings underground. The purpose of the alignment changes and one well location change under this alternative is to minimize potential effects on biological and cultural resources and reduce potential visual effects. Power plant and wellfield construction, operation and decommissioning would be the same as the Proposed Action.

Alternative 4, No Action Alternative, would not construct the CD-IV Project. The three existing geothermal power plants (MP-I, MP-II and PLES-I), the pipeline from Basalt Canyon, and two existing production wells would continue operating in accordance with their respective permits. Under the No Action Alternative, geothermal exploration in Basalt Canyon and Upper Basalt Canyon previously approved would be expected to continue. Previous analyses resulted in the approval of up to ten small diameter (slim hole) and six geothermal exploratory (large diameter) geothermal wells, some of which have been already drilled. Under the No Action Alternative, while no activities related to the Proposed Action would occur, nine additional small diameter and two large diameter exploratory wells could be drilled as previously authorized.

ES.4.1 Comparison of Alternatives

The action alternatives have a common description of equipment, systems, processes, resource inputs, operations, closure plans, and general location. All of the three Action Alternatives propose a 33 MW (net) geothermal power plant, up to 16 geothermal wells, and pipelines. The alternatives differ in the location of the power plant and pipelines. Table ES-1 summarizes the key differences of the alternatives.

ES.4.2 Agency Preferred Alternative

Under NEPA, the “preferred alternative” is a preliminary indication of the lead agency’s preference of action among the Proposed Action and alternatives. A NEPA lead agency may select a preferred alternative for a variety of reasons, including the agency’s priorities, in addition to the environmental considerations discussed in the EIS. In accordance with NEPA (40 CFR 1502.14(e)), the BLM and USFS have identified Alternative 3 as the Preferred Alternative.

Under CEQA, an “environmentally superior alternative” must be identified from among the alternatives analyzed in an EIR or EIS/EIR. The environmentally superior alternative is the alternative found to have an overall environmental advantage compared to the other alternatives based on the impact analysis in the EIR. If the environmentally superior alternative is the No Action Alternative, then the EIR must identify an environmentally superior alternative from among the other alternatives (14 CCR §15126.6(e)(2)). For this Project, the No Action Alternative would be environmentally superior to any of the alternatives, because the impacts of implementing the Proposed Action would be avoided. However, up to 11 previously authorized geothermal exploratory wells in Basalt Canyon could be constructed but would not be part of the CD-IV project. Among the three action alternatives, Alternative 3 has been identified by GBUAPCD as the environmentally superior alternative because of the reduced environmental impacts on biological, cultural resources and visual resources relative to the Proposed Action.

**TABLE ES-1
COMPARISON OF PROPOSED ACTION AND ALTERNATIVES**

Alternative 1 – Proposed Action	Alternative 2 – Plant Site Alternative	Alternative 3 – Modified Pipeline Alternative	Alternative 4 – No Action
Power Plant Site Location			
North of SCE substation	East of existing plants and proposed Well 65-32	Same as Proposed Action	None
Power Plant Components			
Phased construction of power plant (2 years)	Same as Proposed Action	Same as Proposed Action	None
2 OEC binary generating units	Same as Proposed Action	Same as Proposed Action	None
New substation (north of SCE)	New substation adjacent to plant (east of Well 65-32)	Same as Proposed Action	None
Approximately 650 feet of electrical transmission line to the existing SCE Casa Diablo Substation	Approximately 5,000 feet of electrical transmission line to the existing SCE Casa Diablo Substation	Same as Proposed Action	None
Geothermal Pipelines			
<p>Pipeline corridor (if all wells are drilled):</p> <p>Total corridor length: 5.68 miles</p> <p>Length of double pipelines: Approximately 60% (up to 3.5 miles)</p> <p>Total pipeline length: 9.2 miles (14.8 km)</p>	<p>Pipeline corridor (if all wells are drilled):</p> <p>Total corridor length: 5.54 miles</p> <p>Length of double pipelines: Approximately 70% (up to 3.9 miles)</p> <p>Total pipeline length: 9.3 miles (15.0 km)</p>	<p>Pipeline corridor (if all wells are drilled):</p> <p>Total corridor length: 5.42 miles</p> <p>Length of double pipelines: Approximately 67% (up to 3.7 miles)</p> <p>Total pipeline length: 9.1 miles (14.6 km)</p>	None
Production pipeline from all Basalt Canyon wells, crossing under U.S. Highway 395 and north to power plant	Production pipeline same as Proposed Action west of U.S. Highway 395. To access alternative plant site, production pipeline crosses under U.S. Highway 395 and east to power plant	East of U.S. Highway 395, the production pipeline would be the same as the Proposed Action; west of U.S. Highway 395, modified pipeline route to Wells 77-25, 26-30, 56-25, 25-25, 34-25, 15-25, 14-25 and 12-25.	Existing pipeline would remain in place; no new pipelines would be constructed.
<p>Spent brine injection pipelines:</p> <p>(1) Approximately 6,000 feet from power plant south and east to Wells 55-32 and 65-32</p> <p>(2) Injection pipeline to Basalt Canyon (injection well locations to be determined) would be constructed parallel to existing pipeline and proposed production pipeline west of U.S. Highway 395.</p>	<p>Spent brine injection pipelines:</p> <p>(1) Approximately 1,900 feet from alternative power plant site west to Wells 55-32 and 65-32</p> <p>(2) Injection pipeline to Basalt Canyon would be constructed west from the alternative power plant site to U.S. Highway 395. Pipeline alignment would be the same as the Proposed Action west of U.S. Highway 395.</p>	<p>Spent brine injection pipelines:</p> <p>(1) Same as Proposed Action to Wells 55-32 and 65-32.</p> <p>(2) Injection pipeline to Basalt Canyon would be modified the same as production pipeline described above.</p>	None
<p>Pipeline Road Crossings:</p> <p>Where pipelines cross, existing NFSRs and County roads, the pipeline would be constructed underground at the crossing.</p>	Same as Proposed Action	Same as Proposed Action	None

TABLE ES-1 (Continued)
COMPARISON OF PROPOSED ACTION AND ALTERNATIVES

Alternative 1 – Proposed Action	Alternative 2 – Plant Site Alternative	Alternative 3 – Modified Pipeline Alternative	Alternative 4 – No Action
Geothermal Pipelines (cont.)			
<p>Pipeline/Pipeline crossings</p> <p>Areas where geothermal pipelines must cross other pipelines (existing or new), the crossings would be constructed above ground (both pipeline above ground).</p>	<p>Pipeline/Pipeline crossings</p> <p>Areas where geothermal pipelines must cross other pipelines (existing or new), the crossings would be constructed underground (one pipeline underground)</p>	<p>Pipeline/Pipeline crossings</p> <p>Areas where geothermal pipelines must cross other pipelines (existing or new), the crossings would be constructed underground (one pipeline underground)</p>	None
Well Field			
<p>Approximately 6 wells drilled per year until production capacity reached. Western wells 12-25 and 14-25 that were constructed in 2011 would be developed first depending on the results of the well testing.</p> <p>Up to 16 wells could be drilled (production or injection)</p>	Same as Proposed Action.	Same as Proposed Action, with a modification to the location of Well 26-30, which would be moved slightly to the northwest.	Existing exploration and monitoring wells would remain in place. Up to 11 new exploration wells approved previously may be constructed.
Temporary Ground Disturbance and Permanent Impervious Surface Changes^a			
Approximately 78.3 acres of temporary ground disturbance and 17.3 acres of new permanent impervious surface.	Approximately 83.2 acres of temporary ground disturbance and 18.1 acres of new permanent impervious surface.	Approximately 77.1 acres of temporary ground disturbance and 17.5 acres of new permanent impervious surface.	None
Access Roads^b			
<p>Access Roads</p> <p>Improve 5.58 miles (8.98 km) of existing roads (4.97 miles of NFSR and County roads and 0.61 mile of non-NFSR (unauthorized road))</p> <p>Construct 0.77 mile (1.24 km) new roads</p>	<p>Access Roads</p> <p>Improve 5.84 miles (9.40 km) of existing roads (5.23 miles of NFSR and County roads and 0.61 mile of non-NFSR (unauthorized road))</p> <p>Construct 0.77 mile (1.24 km) new roads</p>	<p>Access Roads</p> <p>Improve 5.58 miles (8.98 km) of existing roads, including widening of Sawmill Cutoff Road (NFSR 03S08)</p> <p>Construct 0.87 mile (1.40 km) new roads</p>	None
<p>Road Changes</p> <p>NFSR 03S129E would be closed to public access within the fence line of the proposed CD-IV power plant.</p> <p>NFSRs 03S08N and 03S08P (which are part of Knolls Loop) may be temporarily closed during construction, but would be reopened or rerouted after construction is complete.</p> <p>Other roads and underground crossings may be temporarily closed during construction.</p>	<p>Road Changes</p> <p>No closure of NFSR 03S129E.</p> <p>Would require closure of a portion of NFST 28E207 and the closure and rerouting of a portion of NFSR 03S130.</p> <p>Pipelines required to connect the CD-IV plant to the existing plant would cross several NFSRs roads creating temporary closures (see Figure 4.4-3).</p>	<p>Road Changes</p> <p>Alternative 3 pipelines would cross Knolls Loop and Sawmill Road (03S25) the same number of times as Alternative 1 and result in similar road conflicts.</p> <p>The number of pipeline crossings on other NFSRs would be similar to Alternative 1; however, Sawmill Cutoff Road (NFSR 03S08), which is a signed and groomed winter route, would be crossed once under Alternative 3, rather than twice under Alternative 1</p>	No road changes would be required.

NOTES:

^a See Section 4.19, Surface Water Hydrology

^b See Table 2-3 for additional details regarding potential road changes.

ES.5 Environmental Consequences

Table ES-2 summarizes the environmental impacts that would occur as a result of the Proposed Action and Alternatives by environmental parameter. The unavoidable adverse impacts that would remain after mitigation are also summarized briefly in these tables.

ES.5.1 Major Conclusions

Air Resources: Construction-related emissions of NO_x emissions could result in short-term exceedances of the state 1-hour and/or 8-hour air quality standards for ozone, which would result in a CEQA significant and unavoidable impact. Public health risks and nuisance odors during construction are expected to be negligible. Project operation would result in long-term exceedances of the air quality ozone standards, primarily due to fugitive n-pentane emissions at the power plant, which would result in a CEQA significant and unavoidable impact. Since the Project would include best available technology to limit fugitive n-pentane emissions, there is no additional feasible mitigation that could substantially reduce long-term emissions.

Biological Resources – Vegetation: The CD-IV project would affect approximately 76.4 acres of Jeffrey Pine Forest and Sagebrush Scrub vegetation communities. The Project would not affect federal or state-listed special status species, but has the potential to affect pine fritillary, a non-listed special status plant. The project has the potential to introduce noxious weeds and includes measures to minimize this effect.

Biological Resources – Wildlife: Project construction and operation could affect wildlife through habitat loss, noise, or entrapment in site basins. Special-status species that could be adversely affected include northern goshawk, greater sage-grouse, special-status bats, Sierra marten, and migratory birds. The Project is not expected to have substantial adverse effects on other special-status species in or downstream of the Project area. Proposed pipelines could be an obstruction to wildlife movement, in particular for mule deer migration. The Project includes measures to provide pipeline crossings if needed.

Greenhouse Gases: The CD-IV Project would displace electricity generated by fossil fuel combustion with lower GHG-emitting electricity. Operation of the CD-IV Project would be expected to displace over 89,000 metric tons of CO₂e per year, for the 30-year life of the project.

Cultural Resources: Although CD-IV Project facilities have been designed to avoid known cultural resources, the CD-IV Project could still affect cultural resource sites and a potential National Register Historic District. Mitigation measures would ensure identification, evaluation, and where possible avoidance and protection of such resources during Project construction and operation. Fewer cultural sites would be affected under Alternative 3 compared to Alternatives 1 and 2.

Geothermal and Groundwater Resources: Operation of the CD-IV Project is not expected to cause substantial changes in the availability, quality, or temperature of hot springs, streams, and groundwater resources. Existing long-term monitoring of hydrologic features in Long Valley would be expanded and continue over the life of the project.

**TABLE ES-2
COMPARISON OF ENVIRONMENTAL IMPACTS OF ALTERNATIVES**

Resource	Alternative 1 Proposed Action	Alternative 2 Alternative Plant Site	Alternative 3 Modified Pipeline Alternative	Alternative 4 No Action
Air Resources	Short-term unavoidable construction and long-term operation impacts related to contributing to exceedances of the state 1-hour and/or 8-hour ozone Ambient Air Quality Standards, and impacts to sensitive receptors.	Same impacts as the Proposed Action related to unavoidable contributions to exceedances of the state 1-hour and/or 8-hour ozone Ambient Air Quality Standards; negligible impacts to sensitive receptors slightly increased relative to the Proposed Action.	Similar impacts as the Proposed Action related to unavoidable contributions to exceedances of the state 1-hour and/or 8-hour ozone Ambient Air Quality Standards; negligible impacts to sensitive receptors slightly increased relative to the Proposed Action as the modified route north of Shady Rest Park would be approximately 350 feet closer to the park than would the route under the Proposed Action.	No impacts associated with the construction, operation, and decommissioning of CD-IV Project would occur. Note: Previously approved drilling activities not associated with the CD-IV project may occur at some well locations (Table 2-2).
Biological Resources – Vegetation	Potential for impacts to native vegetation communities (Jeffrey Pine Forest and Big Sagebrush Scrub), special-status and sensitive plant species and spread of noxious weeds, including 61.1 acres of temporary vegetation removal and 15.3 acres of permanent vegetation removal.	Similar impacts as the Proposed Action. Impacts to specific vegetation communities would vary slightly as less Jeffrey pine forest would be impacted but impacts to big sagebrush scrub would increase. Vegetation removal would include 20.96 acres of permanent removal and 60.5 acres of temporary removal.	Similar impacts as the Proposed Action. Under Alternative 3 there would be 15.3 acres of permanent vegetation removal and 59.9 acres of temporary vegetation removal.	No impacts associated with the construction, operation, and decommissioning of CD-IV Project would occur. Note: Previously approved drilling activities not associated with the CD-IV project may occur at some well locations (Table 2-2).
Biological Resources – Wildlife	Potential impacts on wildlife habitats and special status species (such as Northern goshawk, sage-grouse, Sierra marten, and migratory birds) as well as mule deer migration.	Similar impacts on wildlife habitats and special status species. Similar impacts on mule deer migration routes, although shifted east away from Highway 395 resulting in slightly reduced mortality due to vehicle collisions. A 0.4-mile increase in length of double pipelines could result in a slightly increased impedence to deer movement.	Similar impacts as the Proposed Action on wildlife habitats, special status species, and mule deer migration.	No impacts associated with the construction, operation, and decommissioning of CD-IV Project would occur. Note: Previously approved drilling activities not associated with the CD-IV project may occur at some well locations (Table 2-2).
Climate Change	GHG emissions generated by the project are offset by the renewable energy generated. The Project would be expected to displace over 89,000 metric tons of CO ₂ e per year, for the 30 year life of the Project.	Same as the Proposed Action.	Similar impacts as the Proposed Action.	No GHG emissions associated with the construction, operation, and decommissioning of CD-IV would occur; however, the displacement of GHG emissions from existing fossil fuel-fired power plants would not occur as well.
Cultural and Paleontological Resources	Potential for impacts on historical, archaeological and paleontological resources and on human remains.	Same as the Proposed Action.	Similar impacts as the Proposed Action, but would affect fewer known cultural resources.	No impacts associated with the construction, operation, and decommissioning of CD-IV Project would occur. Note: Previously approved drilling activities not associated with the CD-IV project may occur at some well locations (Table 2-2).

TABLE ES-2 (Continued)
COMPARISON OF ENVIRONMENTAL IMPACTS OF ALTERNATIVES

Resource	Alternative 1 Proposed Action	Alternative 2 Alternative Plant Site	Alternative 3 Modified Pipeline Alternative	Alternative 4 No Action
Geothermal and Groundwater Resources	Potential impacts on geothermal hydrologic features and groundwater resources are anticipated to be minimal.	Same as Proposed Action.	Same as Proposed Action.	No impact.
Geologic, Soil and Mineral Resources	Potential impacts on soil resources and impacts related to soil and ground instability.	Same as the Proposed Action.	Same as the Proposed Action but slightly reduced.	No impacts associated with the construction, operation, and decommissioning of CD-IV Project would occur. Note: Previously approved drilling activities not associated with the CD-IV project may occur at some well locations (Table 2-2).
Grazing, Wild Horses and Burros	Under the Proposed Action, there would be 15.3 acres of permanent vegetation removal and 61.1 acres of temporary vegetation removal.	Alternative 2 would result 20.96 acres of permanent vegetation removal and 60.5 acres of temporary vegetation removal.	Under Alternative 3 there would be 15.3 acres of permanent vegetation removal and 59.9 acres of temporary vegetation removal.	No impacts associated with the construction, operation, and decommissioning of CD-IV Project would occur. Note: Previously approved drilling activities not associated with the CD-IV project may occur at some well locations (Table 2-2).
Land Use	The potential to temporarily divide a community and conflict with local land use plans, policies and regulations would be less than significant.	Same as the Proposed Action.	Same as the Proposed Action.	No impact.
Noise and Vibration	Noise impacts to sensitive receptors from project construction, operation and maintenance, and decommissioning.	Short-term impacts to sensitive receptors slightly increased relative to the Proposed Action; long-term increased noise levels at the closest receptor would conflict with local noise ordinance resulting in an unavoidable increased impact relative to the Proposed Action.	Same as Proposed Action.	No impacts associated with the construction, operation, and decommissioning of CD-IV Project would occur. Note: Previously approved drilling activities not associated with the CD-IV project may occur at some well locations (Table 2-2).
Population and Housing	Potential to increase the local population. The average construction workforce would range from 10 to 20 workers during low activity periods and 100 to 120 during high activity periods. Only about six new employees would be required for operation of the CD-IV Project.	Same as the Proposed Action.	Same as the Proposed Action.	No impacts associated with the construction, operation, and decommissioning of CD-IV Project would occur. Note: Previously approved drilling activities not associated with the CD-IV project may occur at some well locations (Table 2-2).

TABLE ES-2 (Continued)
COMPARISON OF ENVIRONMENTAL IMPACTS OF ALTERNATIVES

Resource	Alternative 1 Proposed Action	Alternative 2 Alternative Plant Site	Alternative 3 Modified Pipeline Alternative	Alternative 4 No Action
Public Health and Safety, Hazardous Materials and Fire	Potential for accidental release of hazardous materials. Potential increased risk of fire and need for emergency response.	Same as the Proposed Action.	Same as the Proposed Action.	No impacts associated with the construction, operation, and decommissioning of CD-IV Project would occur. Note: Previously approved drilling activities not associated with the CD-IV project may occur at some well locations (Table 2-2).
Recreation	Potential for impacts to regional and local roads and trails used for walking, jogging, bicycling, and OHV uses during construction and operation and maintenance.	Same as the Proposed Action.	Same as the Proposed Action.	No impacts associated with the construction, operation, and decommissioning of CD-IV Project would occur. Note: Previously approved drilling activities not associated with the CD-IV project may occur at some well locations (Table 2-2).
Socioeconomics and Environmental Justice	No impact.	No impact.	No impact.	No impact.
Traffic and Transportation	Potential increase in traffic along regional and local roadways during construction, operation, and decommissioning activities. Also, the creation of potential road hazards during construction and decommissioning.	Same as the Proposed Action.	Same as the Proposed Action.	No impacts associated with the construction, operation, and decommissioning of CD-IV Project would occur. Note: Previously approved drilling activities not associated with the CD-IV project may occur at some well locations (Table 2-2).
Utilities and Public Services	Potential impacts during construction of stormwater drainage facilities and temporarily increase demand for potable water and water for construction and decommissioning activities.	Same as the Proposed Action.	Same as the Proposed Action.	No Impact
Visual Resources	Potential impacts on visual resources would result from tree removal, construction and decommissioning activities and equipment, and lighting for construction and operations. Long-term impacts on the visual character and quality of the Project site would occur due operation of the pipelines and well facilities. Even with implementation of PDMs and Mitigation Measures VIS-1, VIS-2, and VIS-3, such impacts would be unmitigable.	Similar to the Proposed Action. The power plant would be more visually evident in comparison to Alternative 1. Because the new pipelines, well facilities, and power plant would be visible and since the visual sensitivity of the Project Area is high, impacts would be unmitigable.	Reduced relative to the Proposed Action because pipeline crossings would be underground. However, because the new pipelines and well facilities would be visible and since the visual sensitivity of the Project Area is high, impacts would be unmitigable.	No impacts associated with the construction, operation, and decommissioning of CD-IV Project would occur. Note: Previously approved drilling activities not associated with the CD-IV project may occur at some well locations (Table 2-2).

**TABLE ES-2 (Continued)
COMPARISON OF ENVIRONMENTAL IMPACTS OF ALTERNATIVES**

Resource	Alternative 1 Proposed Action	Alternative 2 Alternative Plant Site	Alternative 3 Modified Pipeline Alternative	Alternative 4 No Action
Surface Water Resources	Potential for degradation of water quality from accidental releases and alteration of drainage patterns	Same as the Proposed Action.	Same as the Proposed Action.	<p>No impacts associated with the construction, operation, and decommissioning of CD-IV Project would occur.</p> <p>Note: Previously approved drilling activities not associated with the CD-IV project may occur at some well locations (Table 2-2).</p>

Geologic, Soil and Mineral Resources: The CD-IV Project would not have substantial adverse effect on soil or mineral resources. Although geothermal fluid extraction is not anticipated to result in land subsidence, however, because a degree of uncertainty exists, the project would include measures to monitor and address potential subsidence concerns. Further, Project design and measures would reduce potential hazards to individuals and structures from regional seismic and volcanic hazards.

Grazing, Wild Horses and Burros: The CD-IV Project would permanently decrease the amount of grazing habitat by 15.3 acres and temporarily decrease the amount of grazing habitat by 61.1 acres.

Land Use: The CD-IV Project would be consistent with applicable land use plans and policies, with inclusion of measures to reduce visual effects of proposed pipelines in scenic areas.

Noise and Vibration: Construction-related noise impacts would be audible in the vicinity of Shady Rest Park, but would be below established noise thresholds limits for Alternative 1. Noise impacts from power plant construction under Alternative 2 would exceed thresholds. Long-term noise levels under Alternative 1 from the power plant and well pumps would be at or below ambient conditions at the nearest sensitive receptors and would be below applicable noise limits. Long-term noise levels under Alternative 2 from the power plant could exceed nighttime noise limits at the nearest sensitive receptor, which would result in a CEQA significant unavoidable impact.

Population and Housing: Construction and operation of the CD-IV Project would not induce growth, require the construction of new housing, or displace existing housing.

Public Health and Safety: Project construction and operation could result in accidental releases of hazardous materials such as fuel, drilling muds, geothermal fluids, and n-pentane. Project design and emergency contingency planning would reduce the potential effect of accidental releases on public health and safety.

Recreation: Project construction and operation could result in conflicts and potential safety hazards on roads and trails in the vicinity. The presence of project facilities, and plowing and other road maintenance activities would somewhat alter the nature of the recreational experience, although pipelines would cross roads underground in an insulated casing to prevent snow melt.

Socioeconomics: Project construction would have a positive effect on local and regional businesses in Mono County through the employment of local workers, leasing of office space, and the spending of non-local construction workers on temporary lodging, food and beverage. The total economic benefits captured locally are estimated to be \$13.4 million. Project operation would result in six new permanent jobs, annual spending for services and repairs, and a direct fiscal benefit of \$175,000 per year to Mono County from royalties.

Transportation: The CD-IV Project is not anticipated to adversely affect traffic on regional and local roadways, traffic safety and transportation in the area.

Utilities and Public Services: The CD-IV Project is not expected to substantially increase demand for fire protection, police protection and school services or require the construction of new municipal utilities.

Visual Resources: The power plant and pipelines would alter the characteristic visual landscape and would result in inconsistencies with the visual quality objectives established by USFS and BLM. The three parallel 24-inch pipelines (one existing (not CD4 project) and two new pipelines) and the new well facilities would be highly visible along the majority of Sawmill Road (03S25), Portions of Sawmill Cutoff Road (03S08), portions of SR 203 (county designated scenic route) and U.S. Highway 395 (State designated scenic highway). Given the high visual sensitivity of this area, the Proposed Action would still result in a substantial adverse effect on the visual character and quality of the site and its surroundings, resulting in a CEQA significant and unavoidable impact.

Water Resources: Construction and operation of the CD-IV Project could potentially affect surface water quality in the event of a major spill or release, although the Project includes measures to prevent and minimize such a potential event. Site-specific grading and erosion plans would reduce potential effects related to increased runoff and erosion.

ES.5.2 Areas of Controversy

Comments were received during the scoping process for the CD-IV Project. The scoping process and public input received during that process are provided in detail in Appendix A, *Scoping Report*. Based on input received from agencies, members of the public and others, areas of controversy related to the Project include:

Air Resources: Concerns related to potential air quality impacts as compared to ambient air quality standards. See Section 4.2, *Air Resources*.

Biological Resources: The disturbance areas associated with the Proposed Action and alternatives consist almost entirely of native habitats, including Jeffrey Pine Forest and Sagebrush Scrub. Specific areas of controversy relating to biological resources relate to effects of habitat disturbance on wildlife, particularly special-status species including Northern Goshawk and Owens tui chub, effects on Mule Deer Migration, special-status species, and mitigation measures. See Sections 4.3, *Biological Resources – Vegetation*; and 4.4, *Biological Resources – Wildlife*.

Cultural Resources: Concerns related to damage and loss of cultural and historic artifacts and other resources; including Indian sacred sites. See Section 4.6, *Cultural Resources*.

Hazards and Public Safety: Concerns related to release of geothermal fluid from wells and pipelines, hazardous gases and fire. See Sections 4.13, *Public Health and Safety, Hazardous Materials and Fire*;

Recreation: Concerns related to recreational trail uses, aesthetic and noise effects on recreational areas. See Section 4.14, *Recreation*.

Water Resources: Concerns generally related to surface water and groundwater availability and quality, and specifically potential impacts on Hot Creek and drinking water resources. See Sections 4.7, *Geothermal Resources* and 4.19, *Surface Water Resources*.

ES.6 Organizations and Persons Consulted

In addition to the scoping process, the BLM has been consulting and coordinating with public agencies who may be requested to take action on the Proposed Action. Consultation and coordination is summarized below and described in detail in Chapter 6.

ES.6.1 Native American Consultation and Coordination

The BLM and USFS consult with Indian tribes on a government-to-government level in accordance with several authorities including NEPA, NHPA §106, and Executive Order 13007 as part of its responsibilities to identify, evaluate, and resolve adverse effects on cultural resources affected by its undertakings. Chapter 6, *Consultation and Coordination*, provides additional detail about this process.

ES.6.2 United States Fish and Wildlife Service

The USFWS has jurisdiction over threatened and endangered species listed under the federal Endangered Species Act (FESA) (16 USC §1531 et seq.). Consultation with the USFWS under §7 of the FESA is required for any federal action that may affect a federally listed species.

ES.6.3 California Department of Fish and Game

The California Department of Fish and Game (CDFG) protects plant and animal species listed under the California Endangered Species Act (CESA) and Fish and Game Code. Formal consultation with the CDFG is required with the state lead agency to ensure that any action it undertakes is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of essential habitat. The USFS and the Applicant will provide information to CDFG to assist the agency in its evaluation of effects on state-listed species.

ES.7 Public Participation

Scoping activities were conducted by the BLM and USFS in compliance with the requirements of NEPA and by GBUAPCD in accordance with CEQA. The scoping activities are described in detail in the Scoping Report, which is provided in Appendix A. The scoping report documents the BLM Notice of Intent, GBUAPCD Notice of Preparation, the scoping meetings, and the comments received during scoping.

ES.7.1 Public Comment Process

The Draft EIS/EIR will be circulated for a 60-day public comment period. All comments must be postmarked no later than 60 days from the date the Notice of Availability for the Draft EIS/EIR published in the Federal Register by the BLM.

To receive comments on the jointly prepared Draft EIS/EIR, the BLM is serving as the single point of contact. Accordingly, comments may be submitted in any of the following ways:

U.S. Post BLM Bishop Field Office
 Attn: Casa Diablo IV Development Project Draft EIS/EIR
 c/o Collin Reinhardt, Project Manager
 351 Pacu Lane, Suite 100, Bishop, California 93514

E-mail: cabipubcom@ca.blm.gov; Subject: Casa Diablo IV Geothermal

Fax: (760) 872-5050

Oral Comments may be submitted to Margie DeRose via telephone at (760) 873-2424, or in person to Margie DeRose at the Inyo National Forest, Supervisor's Office, 351 Pacu Lane, Suite 200, Bishop, CA 93514.

Public meetings will be held in Mammoth Lakes and Crowley Lake, California, to allow written and oral comments to be presented to the Lead Agencies. Please see BLM's web page at <http://www.blm.gov/ca/st/en/fo/bishop.html> for information about the location, date, and time of these meetings. All substantive issues raised during the comment period will be considered, and modifications based on these comments may be made to develop the Final EIS/EIR.

The Draft EIS/EIR may be reviewed at the BLM Bishop Field Office and the Town of Mammoth Lakes Public Library. Additionally, CD-ROM versions of the Draft EIS/EIR may be obtained by contacting the Bishop Field Office. The document also will be available on the Internet at: <http://www.blm.gov/ca/st/en/fo/bishop.html>