IV.21 NOISE AND VIBRATION

This chapter provides a programmatic analysis of potential noise impacts from implementing the various Desert Renewable Energy Conservation Plan (DRECP or Plan) alternatives. The primary consideration in addressing these impacts is to identify the extent to which noise generated within the Development Focus Areas (DFAs) and Conservation Planning Areas would affect existing land uses and wildlife under each alternative. Existing regulations and the affected environment are described in Volume III, Chapter III.21, Noise and Vibration.

IV.21.1 Approach to Impact Analysis

Impacts were determined based on the area of potential development and the summary of common noise impacts associated with all renewable energy developments as well as potential technology-specific impacts. The discussion of noise impacts for the No Action Alternative, Preferred Alternative, and other alternatives is based on county jurisdictional boundaries.

IV.21.1.1 General Methods

The noise and vibration analyses are based on the description of Covered Activities on federal and nonfederal lands and the overall conservation strategy within the Plan Area. Covered Activities are associated with renewable energy development allowed within DFAs. Transmission development may also occur outside the DFAs, but would be subject to permitting and management conditions set by the Plan.

This chapter analyzes the potential noise and vibration impacts typical of solar, wind, and geothermal energy development and associated transmission facilities. Direct or primary effects occur at the same time and place as the project. An indirect effect is caused by a project, but unlike direct effects, it occurs later in time or is farther removed in distance. Short-term impacts occur for a specific and limited period during and after the proposed actions (e.g., construction noise during development). Long-term impacts occur over the life of the development or for an extended period after development and construction are completed, such as maintenance activities.

The DRECP would result in future renewable energy development applications within each DFA, and each project would undergo subsequent individual National Environmental Policy Act (NEPA) and/or California Environmental Quality Act (CEQA) analysis for project-specific impacts. Impacts related to renewable energy projects and associated facilities would vary depending on the technology proposed, specific location of the project site, the time and degree of disturbance resulting from development, and the size and complexity of the facilities.

This chapter assesses potential noise and vibration impacts and conflicts that may result from the development and operation of utility-scale renewable energy facilities in the Plan Area and from the designation of proposed new conservation areas. This chapter discusses the potential noise and vibration impacts resulting from the No Action Alternative, Preferred Alternative, and the four additional action alternatives.

In particular, this analysis considers the impacts of noise and vibration based on the proximity of potential noise- or vibration-sensitive receptors to proposed development areas under each alternative. In addition, because this is a programmatic analysis, the impact analysis is based on general impacts anticipated if renewable energy development occurs; therefore, the impacts are not site or technology specific. This chapter also identifies feasible mitigation measures that would reduce identified adverse impacts.

IV.21.1.2 CEQA Standards of Significance

The following questions in the CEQA Guidelines, Appendix G, are relevant to this plan-level analysis:

Would the project result in:

- Exposure of persons to or generation of noise levels in excess of standards established in local general plans or noise ordinances, or applicable standards of other agencies?
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels?
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?
- For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?
- For a project located within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

While plan components may be located within 2 miles of a public or private airport or within an airport land use plan, the plan components would not expose people or sensitive receptors to excessive noise levels associated with airport operations. Accordingly, the final

two CEQA checklist questions are not relevant to the analysis. The previous four questions are relevant to this project's analysis because construction, operation, and maintenance of renewable energy technologies and the plan components could expose people to noise or vibration and could cause permanent or temporary increases in ambient noise levels.

IV.21.2 Typical Impacts Common to All Action Alternatives

The DRECP and Environmental Impact Report Environmental Impact Statement (EIR/EIS) alternatives offer planning and programmatic options that identify areas for development and conservation, as well as a range of management actions. The alternatives considered would result in future renewable energy development applications within identified development areas, but Plan implementation would not result directly in noise impacts. Project-specific impacts of renewable energy development will be assessed during the permitting process and in supplemental site-specific CEQA/NEPA documents.

Impacts related to renewable energy projects vary greatly depending on the technology proposed and the location of the project. This analysis first identifies typical noise impacts common to solar, wind, and geothermal renewable energy development that occur regardless of the alternative or technology. The Covered Activities for solar, wind, and geothermal projects under the DRECP include site characterization activities, construction and decommissioning, and operation and maintenance. Potential noise impacts may occur from these Covered Activities. Volume II, Chapter II.3, Preferred Alternative, identifies the Covered Activities anticipated to occur during each of these phases.

IV.21.2.1 Impacts of Renewable Energy and Transmission Development

Noise and ground vibration can be generated during many activities associated with utility-scale renewable energy and transmission development including site characterization, construction and decommissioning, and operations and maintenance. While impacts differ in some important aspects based on the particular technologies employed, many impacts are common to all technologies and development approaches.

IV.21.2.1.1 Impacts of Site Characterization

Site characterization activities common to all renewable energy development would include geotechnical testing to establish the suitability of a site for construction, temporary vehicle disturbance on identified corridors, and site reconnaissance. Solar and wind development would also include the installation of temporary meteorological stations. Noise impacts from pre-construction activities would typically be negligible, as these activities require minimal site disturbance, are short-term, and can be conducted with small crews and equipment. Drilling related to soil coring or installing monitoring wells and piezometers may

require larger areas of disturbance and larger equipment. Site characterization activities may occur immediately before or during the construction phase to reduce overall impacts.

Solar and Wind. Solar and wind projects may include the installation of temporary meteorological stations prior to construction of the main components of a facility. These meteorological towers would assess the generation potential and weather conditions of a project site. The number of towers depends on the size of the project terrain, although typically there would be two to four towers.

IV.21.2.1.2 Impacts of Construction and Decommissioning

Construction noise impacts would be similar for all renewable energy technologies. Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., demolition and land clearing, grading and excavation, erection). Construction noise in any one particular area would be temporary and short term and would include noise from site preparation, trucks hauling material, concrete pouring, power tools, and the activities described earlier. Construction equipment, including earthmovers, material handlers, and portable generators would also generate noise and could reach high levels for brief periods. Helicopters may be used to install transmission tower structures (where access is difficult by ground) and to string the conductors, fiber optics, or other wires.

Although noise ranges are generally similar for all construction phases, grading activities tend to involve the most equipment. The noisiest equipment types typically range from 74 decibels (dB) to 88 dB maximum sound level (L_{max}) at 50 feet. Table IV.21-1 shows the measured noise levels of common construction equipment.

Table IV.21-1
Noise Levels for Common Construction Equipment

Equipment	Typical Maximum Sound Pressure Level at 50 feet from Source (dBA)
ATV	79
Backhoe/trencher	85
Dump Truck	88
Front End Loader	85
Generators/Compressors	81
Grader	85
Personal cars	74
Roller/Compactor	74
Scraper/Dozer	85
Semi	86

Table IV.21-1
Noise Levels for Common Construction Equipment

Equipment	Typical Maximum Sound Pressure Level at 50 feet from Source (dBA)
Water Truck	88
Crew Delivery Bus	80
Flat-bed truck	88
Vibratory Post Driver	85
Concrete Truck	88
Forklift	83
Cranes/Lifts	83

Source: Federal Transit Administration (FTA) 2006

Typical operating cycles for noise-emitting equipment may involve a few minutes of full power, followed by several minutes at lower power settings. Average noise levels from the center of construction sites typically range from approximately 65 to 83 A-weighted dB (dBA) equivalent continuous noise level (L_{eq}) at 50 feet, depending on the activities performed. Assuming a conservative acoustically hard site condition, 83 dBA L_{eq} would attenuate to 75 dBA L_{eq} at approximately 125 feet and 60 dBA L_{eq} at approximately 705 feet. These distances are provided for informational purposes, as 75 dBA L_{eq} is typically considered an acceptable construction noise level limit for noise-sensitive human receptors and 60 dBA L_{eq} is typically used as a benchmark for determining potential impacts to threatened or endangered noise-sensitive species.

Construction activities could include pile driving and blasting, which generate impulse noise sources. A single impact pile driver typically produces maximum noise levels of 95 dBA L_{max} at a distance of 50 feet (FTA 2006). Assuming a conservative hard site condition, a single unshielded pile driver could exceed 75 dBA L_{eq} within 225 feet and 60 dBA L_{eq} within 1,255 feet.

In some cases, power plant construction practices such as blasting or pile driving, may produce ground vibration. The ground-borne energy of vibration has the potential to cause structural damage and annoyance.

Construction activities common to renewable energy facilities across all Plan components would include development of the access roads and spur roads, facility buildings, storage yards, fencing, and flood and drainage control facilities. The following summarizes noise levels associated with these components.

- **Access Roads and Spur Roads:** Generally, road construction would be required to access a project site and maintain equipment during operations. Circulation roads

leading to facilities and on-site roads would be constructed using heavy equipment such as bulldozers, loaders, scrapers, graders, and rollers, which would typically generate noise levels of 74 dBA at 50 feet. Permanent roads within the boundary of a facility would typically be constructed of compacted gravel. The extent to which roads would be required depends on site topography, condition, and extent of current roads. Access roads would typically require a shallow gradient for larger vehicles and loads. In steep or complex terrain, the road may be wider to accommodate the turning circle of larger vehicles.

- **Buildings:** Permanent operations and maintenance buildings, including control rooms, would be constructed using standard building and construction techniques. Ancillary buildings are assumed to include parking and equipment storage facilities that would typically occupy a maximum of 10 acres. Construction of operations and maintenance buildings is anticipated to generate maximum noise levels of approximately 83 dBA at 50 feet during grading and foundation construction.
- **Storage Yards:** Temporary construction areas including laydown yards, on-site construction trailers, material storage, and on-site cement batch plants (if required) would require clearing and grading. These yards are assumed to occupy 40 to 50 acres within a project boundary. Typical activities in staging and storage yards include maintenance of heavy equipment and movement of equipment and materials. Typically, noise levels from staging and laydown areas are slightly lower than typical construction and would be anticipated to be approximately 75 dBA L_{eq} at the edge of the yard.
- **Fencing:** Temporary security fencing around laydown yards, on-site construction trailers, material storage, and any on-site cement batch plants would typically be required. Permanent security fencing would surround the perimeter of solar and geothermal sites and around wind operations and maintenance buildings, switchyards, and meteorological (met) towers. Turbines are not usually fenced, although roads accessing turbines may be gated. Construction of fencing would involve limited equipment; therefore, hourly noise levels would be anticipated to generate approximately 65 dBA L_{eq} at 50 feet from the fence line.
- **Flood Control Structures:** Temporary drainage control may be required at laydown yards and temporary sites, including temporary roads, and would be determined on a project–by-project basis. Construction of temporary flood control structures would typically involve loaders and cranes to relocate soil or erect barriers. These activities would typically generate noise levels approximately 72 dBA L_{eq} at 50 feet from the center of active equipment.
- **Permanent Drainage:** Culverts and drainage modification would be required to divert and control runoff. Such drainage systems would be constructed to federal

and state standards. Construction of drainage structures would typically involve backhoes, trenchers, and concrete trucks and pumps. These activities would typically generate noise levels approximately 70 dBA L_{eq} at 50 feet from the center of active equipment.

Noise impacts from decommissioning would be similar for all renewable energy technologies. Decommissioning of solar, wind, and geothermal facilities would involve removal of all aboveground facilities, gravel work pads, and roads. Subsurface facilities (grounding rods and grids, tower and building foundations, natural gas pipelines, etc.) would be removed to a minimum depth of three feet from the surface and otherwise abandoned in place. Laydown areas would be established to support decommissioning. Some may be located on the laydown areas used during construction. Dismantled components would be staged at laydown areas for only as long as necessary to arrange for their removal to disposal, reclamation, or recycling facilities. Reclamation and revegetation activities would occur after the removal of facilities. All gravel packs would be removed. Reclamation of generation facilities laydown areas, substations, access roads, and other "deconstruction" areas would commence immediately upon completing system dismantlement.

In general, noise impacts from decommissioning activities would be similar to those associated with construction activities because the activity type and level would be similar. As with construction, most of the decommissioning activities would occur during the day, when noise is tolerated better than at night because of the masking effect of background noise. Nighttime noise levels would drop to the background levels of a rural environment because decommissioning activities would cease at night. Like construction activities, decommissioning activities would last for a short period compared with wind turbine operation, and, accordingly, the potential impacts would be temporary and intermittent.

IV.21.2.1.3 Impacts of Operations and Maintenance

The operation and maintenance of solar, wind, and geothermal renewable energy projects and associated electricity transmission lines, roads, and ROWs would have potential short- and long-term noise impacts. Renewable energy facilities would include parking areas, mechanical ventilation for offices, and maintenance facilities. Maintenance activities may be required at night, which would contribute to noise impacts for nearby sensitive receptors.

Solar. Typical noise sources associated with solar facilities operations and maintenance include employee vehicles accessing the site, power inverters, tracking motors on individual panels, and maintenance activities of the panels such as cleaning and repair. Solar thermal developments also include power block equipment, such as turbines, various pumps, and heat rejection systems.

Wind. Wind energy conversion systems generate two primary types of noise: aerodynamic noise from the turbine blades passing through the air and mechanical noise from the gears and other components of the generator. Along with the wind turbine noise, typical noise sources associated with wind facilities operations and maintenance include transformer and switchgear noise from substations, corona noise from transmission lines, vehicular traffic noise associated with employees, and noise from the operations and maintenance buildings. Wind turbines and substations would be the noise sources of primary concern. Generally, the noise levels associated with site operations would be lower than the noise levels associated with short-term construction activities. Because wind facility operations and maintenance requires a low number of employees, increased traffic noise associated with employees would be negligible.

Geothermal. Typical noise sources associated with geothermal facilities operations and maintenance include employee vehicles accessing the site, the turbine/generators and the cooling towers, and various secondary noise sources including pumps and equipment associated with the crystallizer and separator. Operational noise levels of the existing geothermal facility in Imperial County were recorded at 70 dBA L_{eq} at approximately 100 feet (AECOM 2008). Because geothermal energy facility operations and maintenance requires a low number of employees, increased traffic noise associated with employees would be negligible.

Transmission. Minor noise would be generated from the post-construction maintenance of the linear transmission facilities installation (i.e., electrical conductors and fiber optic cable). Occasional inspection of the facilities would occur by helicopter, and inspections and repairs would occur by truck. Noise from the fiber optic and transmission lines would consist of wind-induced (Aeolian) and electrically induced (corona discharge) elements.

IV.21.2.2 Impacts of the Reserve Design

In general, the reserve design would result in fewer noise impacts, as the management of these lands would limit disturbance and development. Similarly, the avoidance, minimization, compensation, conservation, and management actions required to achieve the conservation strategy would also result in fewer impacts. The Conservation and Management Actions (CMAs) require noise control consistent with federal, state, and local noise standards.

IV.21.2.3 Impacts of BLM Land Use Plan Decisions

IV.21.2.3.1 Impacts of Renewable Energy Development and Transmission on BLM Lands

The typical noise impacts from the various renewable energy and transmission technologies on BLM lands would be the same as those described in Section IV.21.2.1. However, the specific locations in which energy and transmission development will be allowed will be driven by Land Use Plan Amendment (LUPA) decisions, which may encourage or restrict development in some areas.

IV.21.2.3.2 Impacts of BLM Land Designations and Management Actions

Because the BLM LUPA land designations would be managed to protect ecological, historic, cultural, scenic, scientific, and recreation resources and values, they would also confer general limitations and restrictions on allowable noise levels. While other land uses are allowed within these areas, other uses must be compatible with the resources and values that the land designation is intended to protect.

IV.21.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan

The NCCP would be administered by the California Department of Fish and Wildlife (CDFW) and would apply to the entire Plan Area. The GCP would be administered by the U.S. Fish and Wildlife Service (USFWS) and would apply to nonfederal lands, a subset of the entire Plan Area.

IV.21.2.4.1 Natural Community Conservation Plan

The impacts of renewable energy development permitted under the NCCP would be the same as those defined for the Plan-wide impacts, including the typical impacts described in Section IV.21.2, and for each alternative described below.

IV.21.2.4.2 General Conservation Plan

The types of impacts resulting from renewable energy development permitted under the GCP would be the same as those defined for the Plan-wide impacts, including the typical impacts described in Section IV.21.2. However, the locations where these impacts would occur would vary by alternative. Any differences in these impacts that result from the locational differences are described for each alternative.

IV.21.3 Impact Analysis by Alternative

The following sections present impact analyses for the No Action Alternative, the Preferred Alternative, and Alternatives 1 through 4.

IV.21.3.1 No Action Alternative

IV.21.3.1.1 Impacts Within the Entire Plan Area in No Action Alternative

The No Action Alternative assumes the state's renewable energy goals would be achieved absent the DRECP and that renewable energy, transmission development, and mitigation for such projects in the Plan Area would occur on a project-by-project basis in a pattern consistent with past and ongoing renewable energy and transmission projects.

Under the No Action Alternative, noise impacts of future renewable energy development are estimated to be consistent with current development patterns and technology mix, which emphasize:

- Solar development in the Cadiz Valley and Chocolate Mountains and Imperial Borrego Valley ecoregion subareas; wind development in the ecoregion subarea of West Mojave and Eastern Slopes; and geothermal in Imperial Borrego Valley eco-region subarea.
- One new transmission line from Imperial Substation to Sycamore Substation in San Diego.
- Solar Programmatic Environmental Statement (Solar PEIS) Variance Lands would be available for development, as would other lands; there would be no Future Assessment Areas (FAAs) or Special Analysis Areas (SAAs).
- Conservation would be contained in existing protected lands (Legislatively and Legally Protected Lands [LLPAs]) and existing areas managed by BLM for the conservation of resource values (existing Areas of Critical Environmental Concern [ACECs] or wilderness areas).

IV.21.3.1.1.1 Impacts and Mitigation for Renewable Energy and Transmission Development in No Action Alternative

Noise impacts from solar and ground-mounted distributed generation, wind, geothermal and transmission would occur within each ecoregion subarea. The No Action Alternative has no defined Development Focus Areas (DFAs), but its available development lands amount to 9,781,700 acres. The No Action Alternative is assumed to result in a total of 122,000 acres of permanent ground disturbance from development of renewable generation projects.

Impacts

Impact NV-1: Plan components would generate noise that would adversely affect sensitive receptors.

The No Action Alternative for the DRECP encompasses all renewable energy development on federal and nonfederal lands within the Plan Area. The integrated No Action Alternative map in Volume II, Figure II.2-1, shows potential development areas under the No Action Alternative, and Table II.2-7 summarizes the acreage of areas available for renewable energy and transmission development under the No Action Alternative. Most of the areas available are in Imperial and San Bernardino counties.

Under the No Action Alternative the state's renewable energy goals would be achieved absent the DRECP and renewable energy, transmission development, and mitigation for such projects in the Plan Area would occur on a project-by-project basis in a pattern consistent with past and ongoing renewable energy and transmission projects. Due to the noise levels associated with construction and operation, noise impacts at adjacent properties or habitat would be common. Noise impacts from renewable projects can typically be reduced through compliance with local laws and regulations and the implementation of project level noise mitigation including but not limited to noise barriers, equipment selection, and site design. Specific mitigation would be identified as part of the project-level environmental review when specific renewable energy projects are proposed.

Construction and Decommissioning Impacts

An estimate of potential noise impacts under the No Action Alternative can be correlated to the estimates of temporary and long-term impacts from renewable energy projects within each ecoregion subarea. The anticipated noise impacts from technology-specific developments under the No Action Alternative are provided in the following discussions.

Solar. In addition to the construction activities discussed in Section IV.21.2.1, construction activities for solar development would include the following:

Meteorological Stations: Solar projects would include the installation of temporary meteorological stations prior to construction of the main components of a solar energy facility. These meteorological towers would assess the generation potential of a project site. The number of towers depends on the size of the project terrain, although typically there would be two to four towers. It was assumed that meteorological stations would be 265-foot-tall, self-supporting monopole structures with an assumed permanent disturbance footprint of 900 square feet (0.02 acre). Construction equipment used to erect these towers could include cranes, drills, pile drivers, bulldozers, loaders, and concrete trucks. If pile driving is not required, construction-generated noise levels would average

approximately 80 dBA L_{eq} 50 feet from the center of equipment activity. If pile driving is required, average hourly noise levels would be approximately 88 dBA L_{eq} at 50 feet from the impact point of the hammer and pile.

Foundations: Depending on the technology, solar facilities may require relatively flat sites, which may require substantial grading. Thus, grubbing, clearing, and site grading is assumed across the entirety of an area required for solar generation facilities (solar arrays, troughs, mirror towers, etc.). Equipment used to construct foundations would include bulldozers, excavators, loaders, and concrete trucks. This type of equipment and activity would typically generate noise levels between 74 dB to 88 dB L_{max} at 50 feet or approximately 83 dBA L_{eq} at 50 feet from the center of the equipment activity. If pile drivers are used for foundations, construction generated noise levels are calculated to be approximately 88 dBA L_{eq} at 50 feet from the pile impact point.

Evaporation Ponds: Concentrated solar power projects may require the construction of cooling evaporation ponds as part of the cooling structures. Construction of the evaporation ponds would typically be done with bulldozers, loaders, and graders, and is anticipated to generate noise levels of approximately 83 dBA L_{eq} from the center of the active equipment.

Wind. In addition to the construction activities discussed in Section IV.21.2.1, construction activities for wind development would include the following:

Meteorological Stations: Temporary meteorological stations would be required for wind energy developments. As a worst case, it was assumed that meteorological stations would be 328-foot-tall, self-supporting monopole structures with an assumed long-term disturbance footprint of 900 square feet (0.02 acre). Permanent meteorological stations are anticipated to be collocated with the wind turbines. Construction equipment used to erect the temporary towers could include cranes, pile drivers, bulldozers, loaders, and concrete trucks. If pile driving is not required, construction-generated noise levels would average approximately 80 dBA L_{eq} 50 feet from the center of equipment activity. If pile driving is required, average hourly noise levels would be approximately 88 dBA L_{eq} at 50 feet from the impact point of the hammer and pile.

Blasting: Depending on local geological conditions, explosive blasting for wind turbine foundations might be needed. Blasting would create a compressional wave in the air (air blast overpressure) and the audible portion would be noise. Blasting would generate the maximum noise levels of approximately 95 dBA L_{max} or 74 dBA L_{eq}.

Staging/Laydown Area: At each turbine site, vegetation clearance and grading would be required to prepare the ground for heavy lifting cranes and transport vehicles. Typically, an

area of about 3 acres is cleared, within which the ground is compacted and stabilized to enable the use of heavy lifting cranes. Construction equipment would typically include bulldozers, loaders, graders, and ground compactors, and would generate noise levels of approximately 83 dBA L_{eq}.

Geothermal. In addition to the construction activities discussed in Section IV.21.2.1, construction activities for geothermal development would include the following:

Well Field Facilities: Well fields consist of multiple injection and production wells situated on concrete pads that hold all the equipment necessary to operate a well. Geothermal production fluid pipelines and injection fluid pipelines run throughout the well field to circulate steam and fluids between the well field and the generation site. Drilling associated with well fields would generate noise levels of approximately 85 dBA L_{eq} at 50 feet from the center of equipment. Well head and pipeline construction would involve a welder truck and cranes. These activities would generate noise levels of approximately 80 dBA L_{eq} at 50 feet.

Transmission. In addition to the construction activities discussed in Section IV.21.2.1, construction activities for transmission development would include the following:

Pole Placement: Construction activities associated with the pole and tower placement or replacement and conductor and cable installation would be temporary in nature and would not result in a long-term increase in noise levels. Pole placement would require the use of cranes, mounted augur drills, and depending on the size of the poles used, pile drivers. The maximum intermittent noise level expected during pole and tower replacement and conductor and cable installation—without pile driving—would be 82 dBA at approximately 50 feet. If pile driving is required, pile driving of poles would generate noise levels of approximately 88 dBA L_{eq} at 50 feet.

Operation and Maintenance Impacts

Renewable energy technologies and transmission would result in long-term impacts due to operational and maintenance activities under the No Action Alternative. In addition to the typical impacts from renewable energy developments discussed in Section IV.21.2.1, the anticipated noise impacts from technology-specific developments are provided in the following discussions.

Solar. Typical noise sources associated with solar facilities operations and maintenance include employee vehicles accessing the site, power inverters, tracking motors on individual panels, and maintenance of the panels, such as cleaning and repair. Based on a review of noise assessments prepared for solar development projects in Southern California, a typical power inverter generates 66 dBA L_{eq} measured at a distance of 50 feet without an enclosure. The tracking motors that tilt an array of panels typically generate

38 dBA L_{eq} at 50 feet. Maintenance, panel washing, and cleaning of the facility generate approximately 76 dBA L_{eq} at 50 feet. Because solar facilities operations and maintenance requires a low number of employees, increased traffic noise associated with employees would be negligible.

Concentrated solar power technologies (parabolic trough and power tower) generally require additional equipment, such as small-scale boilers and cooling towers, which would create additional noise sources. Other sources may include space-heating boilers and diesel-fueled emergency power generators or emergency fire-water pump engines (typically operating only a few minutes per month for preventive maintenance purposes). Noise levels from these sources would be similar to light industrial noise levels (80 to 85 dBA L_{eq} at 50 feet); however, these sources are well-documented, and the industry has developed effective methods for reducing noise levels at the source to comply with local noise standards. These sources are typically placed within structures or enclosures.

No solar projects are anticipated for the Panamint Death Valley, Pinto Lucerne Valley and Eastern Slopes, or Piute Valley and Sacramento Mountains ecoregion subareas; therefore, there are no expected noise impacts from solar projects in these ecoregion subareas.

Under the No Action Alternative, solar energy projects would occur within the following ecoregion subareas: Cadiz Valley and Chocolate Mountains, Kingston and Funeral Mountains, Mojave and Silurian Valley, Owens River Valley, Providence and Bullion Mountains, and West Mojave and Eastern Slopes. Approximately 108,000 acres of long-term ground conversion would potentially occur within these ecoregion subareas. Any solar development would result in impacts described in Section IV.21.2.1, Typical Impacts Common to All Alternatives. The degree of impact would depend on the location of sensitive receptors relative to a project site, size, and acres disturbed for development.

Wind. In addition to operation noise sources common to all renewable energy sources, wind development includes large turbines that would be the noise sources of primary concern.

Turbines: Wind turbines generate two types of noise: aerodynamic and mechanical. The significance of a turbine's noise impact is a combination of both. The blades passing through the air generate aerodynamic noise, and the turbine's internal gears and components generate mechanical noise. Large-scale turbines used by utilities are insulated to prevent mechanical noise from proliferating outside the nacelle (cover housing) or tower. Smaller residential turbines are more likely to produce noticeable mechanical noise due to inadequate insulation. The magnitude of aerodynamic noise is related to the ratio of the blade tip speed to wind speed and corresponds to the generation of power.

Recent improvements in mechanical design of large wind turbines have resulted in significantly reduced mechanical noise from both broadband and pure tones. Thus, the noise emission from modern wind turbines is dominated by broadband aerodynamic noise, and the wind turbine sound level is primarily a function of wind speed.

Depending on the turbine model and the wind speed, aerodynamic noise can generate a whooshing or pulsing effect. Most noise radiates perpendicular to the blades' rotation. However, since turbines rotate to face the wind, they may radiate noise in different directions each day. Wind turbines generate broadband noise with frequency components from 20 hertz to 3.6 kilohertz. The frequency components vary with pitch of the blade and wind and blade speed. The "swish-swish" sound is the high-frequency noise of blade tip turbulence; it does not contain low frequencies. Large variable-speed wind turbines often rotate at slower speeds in low winds and increase in higher winds until the limiting rotor speed is reached. This results in much quieter operation in low winds than comparable constant-speed wind turbines.

As the turbines typically operate both during the daytime and at night, the impacts of turbine noise are typically based on the change in the lowest nighttime ambient noise levels. However, wind generates noise due to interactions between wind and vegetation, which dominates and determines the existing ambient noise levels. While several factors influence the sound level generated by wind flowing over vegetation, the total magnitude of wind-generated noise depends more on the size of the windward surface of the vegetation than the foliage density (Fégeant 1999). Thus, whether a wind turbine exceeds the background sound level will depend on how much the ambient noise level varies with wind speed.

Favorable conditions for sound propagation can typically occur on a clear night when the temperature increases and a temperature inversion is created, which forces sound to refract or bend downward (i.e., the sound of the turbine will carry farther). This condition would typically occur only at lower wind speeds; that is, less than 9 feet per second, as stronger winds reduce the effect of an inversion. Modern wind turbines have a required operational minimum wind speed requirement of about 8 to 13 feet per second; thus, increased noise propagation associated with temperature inversion is anticipated to be minimal in most operations. The exception would be in sheltered valleys with relatively low ambient noise levels. However, the effects of wind speed on noise propagation would generally dominate over those of temperature gradient.

Whether the turbine noise is intrusive depends not only on its distribution of amplitude and frequency, but also on the background noise, which varies with the level of human and animal activities and meteorological conditions (primarily wind speed). While there is no uniform standard for regulating noise from wind turbines and there is no common noise level for wind turbines, setbacks of 1,800 feet or greater from local residences and habitat

containing threatened or endangered noise-sensitive species may avoid the need for detailed studies. This distance would be refined based on make, model, and acoustic package of specific wind turbines and the applicable regulation and detailed noise propagation modeling.

Wind energy projects are anticipated in the Imperial Borrego Valley and the West Mojave and Eastern Slopes ecoregion subareas. Under the No Action Alternative, noise impacts from wind projects would occur in these two ecoregion subareas.

Geothermal. Typical noise sources associated with geothermal facilities operations and maintenance include the turbine/generators and the cooling towers and various secondary noise sources including pumps and equipment associated with the crystallizer and separator. Operational noise levels of the existing geothermal facility in Imperial County were recorded at 70 dBA L_{eq} at approximately 100 feet (AECOM 2008).

In addition to operation noise associated with the main facilities, noise is also generated during ongoing drilling operations, which would be similar to noise generated under construction and exploration, although longer durations of the noise related to the well drilling would be expected. In addition, construction of injection wells and sump pits would increase local noise in the short-term impacts.

Under the No Action Alternative, geothermal projects are anticipated in the Imperial Borrego Valley ecoregion subarea.

Transmission. Noise would be generated from the maintenance of the linear facilities (i.e., fiber optic cable). Operations noise from transmission facilities would consist of noise associated with substations: transformer noise and switchgear noise. Each has a characteristic noise spectrum and pattern of occurrence.

Transformers: Substations usually generate steady noise from the operation of transformers and the cooling fans and oil pumps needed to cool the transformer during periods of high electrical demand. With all auxiliary cooling fans operating, the worst-case noise level from the transformers at full load is predicted to be no more than 66 dBA at 3 feet away from the equipment. Typically, transformers are located near the center of the substation footprint. Due to the typical distance to the nearest noise-sensitive receivers, transformer-generated noise would not be audible over ambient noise levels.

Switchgear: Switchgear noise is generated by the operation of circuit breakers used to break high-voltage connections. An arc formed between the separating contacts has to be "blown out" using a blast of high-pressure gas. The resultant noise is impulsive in character (i.e., loud and of very short duration).

Circuit breaker noise occurs only very occasionally and not during normal operations. Circuit breaker noise would only occur to protect the grid in an unusual event, such as a lightning strike. A circuit breaker can generate maximum instantaneous noise levels (over approximately 6 milliseconds) on the order of 90 dBA L_{max} at 65 feet, which is approximately equivalent to 50 dBA L_{eq} at 50 feet.

Impact NV-2: Plan components would generate ground-borne vibrations that adversely affect sensitive receptors.

Renewable energy technologies and transmission would generate vibrations during construction from the movement of heavy equipment, earth movement, drilling, pile driving, rock breaking, and explosives blasting.

Construction activities produce varying degrees of ground vibration, depending on the equipment and methods employed. While ground vibrations from typical construction activities rarely reach levels high enough to cause damage to structures, special consideration must be made when sensitive or historic land uses are near the construction site. Ground-borne vibration generated by construction projects is usually highest during pile driving, soil compacting, jackhammering, and demolition-related activities; with the exception of these sources, vibrations are well below the levels of concern at distances ranging beyond 65 feet. Vibrations generated by sources such as pile drivers, soil tampers, jackhammers, and explosives are typically below a level of concern at distances ranging beyond 200 feet.

Some renewable energy technologies would generate vibrations during operation. Experience at renewable energy facilities demonstrates a low probability for ground-borne induced vibration impacts to surrounding land uses associated with solar PV developments or transmission projects. However, wind, geothermal, and solar thermal include the use of high-speed rotating mechanical equipment, including turbines and generators, during operation and have the potential to be sources of ground-borne vibrations. An imbalance in a turbine would generate ground vibration in the vicinity of the equipment. Mechanical equipment typically used is well-balanced and designed to avoid substantial vibration levels throughout the life of the project. In addition, vibration-monitoring systems are usually installed in the equipment to ensure that the equipment remains balanced. The ongoing monitoring along with the typical distances between the power blocks and the nearest sensitive receptors (typically on the order of a half-mile or more for renewable energy), as well as the characteristics of the buildings surrounding turbine generators, would control vibration such that vibrations above the threshold of detectability would not be generated beyond the project boundary. However, project-specific impacts of renewable energy development and vibration sources will be assessed during the permitting process and in supplemental site-specific CEQA/NEPA documents.

Impact NV-3: Plan components would generate noise or ground-borne vibration levels in conflict with local standards.

Renewable energy technologies and transmission would result in noise and vibration impacts from construction and operation, which would potentially conflict with local standards. Local standards usually allow limited noise from daytime construction activities, and the potential for operational and maintenance noise to create land use conflicts would only occur for particular sites unable to provide sufficient setbacks between the renewable energy project and sensitive areas. As such, sources of noise or vibration that operate at night or in the immediate vicinity of sensitive areas would be the most likely to conflict with local standards. Conflicts with local noise ordinances or vibration standards under the No Action Alternative would be an impact on these communities. Project-specific impacts of noise and vibration and potential land use conflicts will be assessed during the permitting process and in supplemental site-specific CEQA/NEPA documents.

Laws and Regulations

Existing laws and regulations would reduce the impacts of renewable energy development projects in the absence of the DRECP. Relevant regulations are presented in the Regulatory Setting in Volume III. Although federal and state laws identify the hazards of noise, limits on noise and vibration are largely enforced by the local jurisdictions as follows:

- Local regulations limit the duration of construction activities and the time construction activities are allowed in daytime hours. Typically, construction activities are only allowed between the hours of 7:00 a.m. and 7:00 p.m.
- Local regulations limit the noise levels from construction activities. Construction noise levels are typically limited to 75 dBA L_{eq} or less at noise-sensitive receptors.
- Local regulations include noise level limitation between properties. These limitations are usually based on the land use zone and the time of day with greatest protections provided for residential uses at night. Typical noise level limits are 45 to 60 dBA L_{eq} for noise-sensitive uses (such as residential, institutional, medical, etc.), 60 to 70 dBA L_{eq} for office and other commercial land uses, and greater than 70 dBA L_{eq} for industrial and non-noise-sensitive land uses.
- The Solar PEIS includes numerous design features (Appendix W) that would reduce the potential impacts on the acoustic environment from solar energy development on BLM lands, including measures for early-phase consultation to identify existing ambient levels and potentially sensitive receptors (Appendix W design feature N1-1) and to control or minimize noise impacts to surrounding properties and habitat during siting, design, and construction (Appendix W design feature N2-1).

- The Solar PEIS also includes design features (Appendix W, N3-1 and N4-1) to control and minimize noise impacts on surrounding properties and habitat from operation, maintenance, reclamation, and decommissioning of solar energy development on BLM lands.

Mitigation

Noise mitigation that has been adopted for approved renewable energy and transmission development projects is likely to be the same as mitigation that would be applied in the future under the No Action Alternative. Typical mitigation measures include setbacks and buffers, noise barriers, equipment selection, and site design to reduce noise impacts.

Typical Mitigation Measures Common to Renewable Energy and Transmission:

1. Conduct noise measurements to assess the existing background ambient sound levels both within and outside the project site and compare these with the anticipated noise levels proposed at the facility. The ambient measurement protocols of all affected land management agencies shall be considered and utilized. Nearby residences and likely sensitive human and wildlife receptor locations shall be identified.
2. Limit noisy activities (including blasting and pile driving) to the least noise-sensitive times of day (weekdays only between 7:00 a.m. and 7:00 p.m.).
3. All equipment should have sound-control devices no less effective than those provided on the original equipment. Muffle and maintain all construction equipment used.
4. If blasting or other noisy activities are required during the construction period, notify nearby residents in advance.
5. Locate all stationary construction equipment (i.e., compressors and generators as far as practicable from nearby residences and other sensitive receptors.
6. Locate permanent sound-generating facilities (e.g., compressors, pumps) away from residences and other sensitive receptors. In areas of known conflicts, consider installing acoustic screening.
7. Where feasible, incorporate low-noise systems, such as ventilation systems, pumps, generators, compressors, and fans.
8. Whenever feasible, schedule different noisy activities (e.g., blasting and earthmoving) to occur at the same time since additional sources of noise generally do not add a significant amount of noise. That is, less-frequent noisy activities would be less annoying than frequent less-noisy activities.

9. To the extent practicable, route heavy truck traffic supporting construction activities away from residences and other sensitive receptors.

Typical Mitigation Measures for Solar Energy:

1. Schedule maintenance activities, such as panel washing, to minimize disruption to adjacent residents and habitat.
2. Locate transformer and inverter packages centrally within the project.
3. Orient inverter ventilation fans toward the center of the project site and away from project boundaries.
4. Require a minimum 300-foot setback from project boundaries for all noise generating equipment and internal roadways.
5. Install transformers with reduced flux density, which generate noise levels as much as 10 to 20 dB lower than National Electrical Manufacturers Association (NEMA) standard values, or use barrier walls, partial enclosures, or full enclosures to shield or contain transformer noise.

Typical Mitigation Measures for Wind Energy:

1. Require a minimum 1,800-foot setback between all wind turbines and occupied structures, and require site-specific acoustical studies before locating new wind turbines within 3,000 feet of an occupied structure.
2. Wind turbine blade tip speed will be limited, 10 meters per second or less, to reduce noise in high wind events.

Typical Mitigation Measures for Geothermal Energy:

1. The project will prepare a noise control program. The noise control program shall be used to reduce employee exposure to high noise levels from geothermal operations and to comply with applicable OSHA and Cal/OSHA standards.
2. The project will equip steam blow piping with a temporary silencer that quiets the noise of steam blows to no greater than 74 dBA measured at a distance of 100 feet.
3. Prior to the first steam blow, the project will notify residences within 500 feet of the facility property line of the scheduled testing. The notification may be in the form of a letter to the residence, a telephone call, a flier or other effective means. The notification will include a description of the purpose and nature of the steam blow, the proposed schedule, the expected sound levels, and the explanation that it is a one-time operation and not a part of normal plant operations.

4. Following the project first achieving a sustained output of 80% or greater of rated capacity, the project owner will conduct a noise survey to identify potential noise impacts from the facility. The survey results will be used to determine the magnitude of noise exposure at surrounding properties.
5. Drilling activities will not be allowed after 7:00 p.m. or before 7:00 a.m. on any weekday and will not be allowed on weekends or holidays.

IV.21.3.1.1.2 Impacts from Reserve Design in the No Action Alternative

The No Action Alternative has no reserve design, but without approval of one of the action alternatives, there would be continued protection of existing LLPAs like wilderness areas. Under the No Action Alternative, renewable energy projects would continue to be evaluated and approved with project-specific mitigation requirements.

IV.21.3.1.2 Impacts on BLM Lands of Existing BLM Land Use Plans in No Action Alternative

The No Action Alternative would result in no changes to BLM land use plans. Current land use restrictions and development constraints, including requirements of the BLM Solar PEIS, would guide construction and operation of renewable energy facilities. Impacts NV-1 through NV-3 would occur, and mitigation would be required by BLM based on project-specific analysis and NEPA compliance.

IV.21.3.1.3 Impacts of Natural Community Conservation Plan in No Action Alternative

The NCCP would apply to all lands within the Plan Area. In the absence of Plan implementation, the NCCP would not be approved and no incidental take permits would be issued under the NCCP. Projects would continue to be considered by the appropriate lead agency on an individual basis. The impacts that would occur in the absence of the NCCP would be the same as those described in Section IV.21.3.1.1.1 (Plan-wide analysis).

IV.21.3.1.4 Impacts of General Conservation Plan in No Action Alternative

As described in Appendix M, the GCP would apply to nonfederal lands in the Plan Area. In the absence of Plan implementation, the GCP would not be approved and no incidental take permits would be issued under the GCP. Projects would continue to be considered by the appropriate lead agency on an individual basis. The impacts that would occur in the absence of the GCP would be the same as those described in Section IV.21.3.1.1.1 (Plan-wide analysis), but would be specific to nonfederal lands.

IV.21.3.1.5 Impacts Outside the Plan Area in No Action Alternative

IV.21.3.1.5.1 Impacts of Transmission Outside the Plan Area

To convey renewable energy from the Plan Area to load centers, additional transmission lines would be required outside the Plan Area. Under all alternatives, these lines would be in existing transmission corridors in San Diego, Los Angeles, North Palm Springs–Riverside, and the Central Valley.

Impact NV-1: Plan components would generate noise that would adversely affect sensitive receptors.

Activities associated with transmission pole and tower placement or replacement and conductor installation would be temporary and would not result in a long-term increase in noise levels. Pole and tower placement would require graders to prepare tower sites and, if needed, access roads, mounted augur drills and concrete trucks to create tower foundations, trucks to deliver materials, and cranes to install tower sections. The maximum intermittent noise level expected during pole and tower replacement and conductor and cable installation would be 82 dBA at approximately 50 feet.

Once in operation, occasional vehicle noise would be generated from the maintenance and inspection of lines. Substations usually generate steady noise from the operation of transformers, switchgears, and circuit breakers. Fans and oil pumps needed to cool transformers during periods of high electrical demand would generate noise levels typically around 65 dBA. With all auxiliary cooling fans operating, the worst-case noise level from the transformers at full load is predicted to be no more than 66 dBA at 3 feet away from the equipment. Typically, transformers are located near the center of the substation footprint. Due to the typical distance to the nearest noise-sensitive receivers, transformer-generated noise would not be audible over ambient noise levels. Switchgear noise is generated by the operation of circuit breakers used to break high-voltage connections. An arc formed between the separating contacts has to be "blown out" using a blast of high-pressure gas. The resultant noise is impulsive in character (i.e., loud and of very short duration). Circuit breaker noise occurs only very occasionally and not during normal operations. Circuit breaker noise would only occur to protect the grid in an unusual event, such as a lightning strike.

None of these operational noise sources would be loud enough or of sufficient duration to create adverse noise effects.

Impact NV-2: Plan components would generate ground-borne vibrations that adversely affect sensitive receptors.

Transmission construction activities can produce varying degrees of ground vibration, depending on the equipment and methods employed. Ground vibrations from typical construction activities very rarely reach levels high enough to cause damage to structures. Ground-borne vibration generated by construction projects is usually highest for activities such as pile driving, soil compacting, jackhammering, and demolition-related activities, none of which are typical in transmission line construction. Vibration levels typically are well below the levels of concern at distances ranging beyond 65 feet.

Impact NV-3: Plan components would generate noise or ground-borne vibration levels in conflict with local standards.

Transmission line construction would result in noise impacts that potentially would conflict with local standards. When specific transmission lines are proposed, an analysis of noise and vibration levels for potential land use conflicts would be completed in supplemental site-specific CEQA/NEPA documents.

IV.21.3.1.5.2 Impacts of Existing BLM Land Use Plans Outside the Plan Area

Under the No Action Alternative, the existing BLM CDCA land use plan would continue to be implemented on CDCA lands. Under the No Action Alternative, renewable energy projects would still be developed through BLM's existing policies. Noise and vibration impacts would be of the types described in Section IV.21.2.1, with similar mitigation measures being included on a case-by-case basis.

IV.21.3.1.6 CEQA Significance Determination: No Action Alternative

NV-1: Plan components would generate noise that would adversely affect sensitive receptors. Development of renewable energy technologies and transmission would result in noise from construction vehicles and activities and from operational activities and vehicles. The potential for a significant noise impact exists where the noise of a given project plus the background ambient noise level may exceed the background by more than 5 dBA at the nearest sensitive receptor. Impacts depend on the particular site-specific background ambient noise levels and the distances that separate sensitive land uses from the renewable energy development. The types of facilities most likely to adversely affect receptors are concentrated solar power, wind turbines, and geothermal technologies. In each project vicinity, for example, within 300 feet of solar project boundaries, within 1,800 feet of wind turbines, or within 500 feet of geothermal facilities, receptors could experience a substantial permanent increase in ambient noise levels. Mitigation would normally be required to avoid noise levels that are excessive or substantially above ambient

levels (see typical mitigation in Section IV.21.3.1.1.1). Impact NV-1 would be less than significant with implementation of typical mitigation.

NV-2: Plan components would generate ground-borne vibrations that adversely affect sensitive receptors. Under the No Action Alternative, development of the renewable energy technologies and transmission would cause vibration impacts on sensitive receptors not provided a sufficient setback or buffer distance from activities. Because project-related vibration would not be generated above the threshold of detectability beyond renewable energy project site boundaries, mitigation would not be required to avoid excessive vibration levels. Impact NV-2 would be less than significant.

NV-3: Plan components would generate noise or ground-borne vibration levels in conflict with local standards. Development of renewable energy technologies and transmission would result in noise and vibration levels that could potentially conflict with local standards under the No Action Alternative. Local standards usually allow limited noise from daytime construction activities, and the potential for operational and maintenance noise to create land use conflicts would only occur for particular sites unable to provide sufficient setbacks between the renewable energy project and sensitive areas. Mitigation would normally be required to ensure that development activities occur in a manner that avoids causing noise or vibration levels in excess of local standards (see typical mitigation in Section IV.21.3.1.1.1). Impact NV-3 would be less than significant with mitigation.

IV.21.3.2 Preferred Alternative

IV.21.3.2.1 Plan-wide Impacts of Implementing the DRECP: Preferred Alternative

The primary driver of the configuration of the Preferred Alternative is balancing biological and nonbiological resource conflicts (on BLM lands) and renewable energy goals. Thus, under the Preferred Alternative, the DFAs have moderate conflict between biological and nonbiological (on BLM lands) resources and provide moderate development flexibility. The DFAs are concentrated in few locations with some smaller DFAs throughout the Plan Area. Based on these parameters, the DFAs under the Preferred Alternative total 2,024,000 acres.

The Preferred Alternative results in long-term ground disturbance of 144,000 acres with 118,000 acres from solar projects and distributed generation, 9,000 acres from wind projects, 17,000 acres from geothermal projects and additional acres from associated transmission, which includes substations and generator tie lines (gen-ties) within the Plan Area.

IV.21.3.2.1.1 Plan-wide Impacts and Mitigation Measures from Renewable Energy and Transmission Development

Impact Assessment

Impact NV-1: Plan components would generate noise that would adversely affect sensitive receptors.

The Plan components associated with renewable energy technologies and transmission would result in increases in both short- and long-term noise levels in the vicinity of the developments, represented by ground disturbance. The permanent ground disturbance is estimated to be 144,000 acres throughout the Plan Area. Therefore, 144,000 acres would be exposed to short-term noise impacts from construction activities and long-term noise impacts under the Preferred Alternative. The Preferred Alternative covers the same area as the No Action Alternative and would be subject to the same noise standards as described for the No Action Alternative in Section IV.21.3.1.1.1. Therefore, as with the No Action Alternative, renewable energy and transmission development under the Preferred Alternative would require mitigation to reduce noise impacts.

Impact NV-2: Plan components would generate ground-borne vibrations that adversely affect sensitive receptors.

The Plan components associated with renewable energy technologies and transmission would cause vibration impacts under the Preferred Alternative for sensitive receptors not provided a sufficient setback or buffer distance from activities. Examples of these impacts are discussed in Impact NV-2 under the No Action Alternative in Section IV.21.3.1.1.1. Typical vibration levels generated during development of renewable energy projects and transmission have a low probability of being above the threshold of detectability beyond the project boundary. Therefore, renewable energy and transmission development under the Preferred Alternative would not require mitigation to reduce vibration impacts.

Impact NV-3: Plan components would generate noise or ground-borne vibration levels in conflict with local standards.

Plan components from the renewable energy technologies and transmission would result in noise and vibration levels that could potentially conflict with local standards under the Preferred Alternative. Sources of noise or vibration that operate at night or in the immediate vicinity of sensitive areas would be the most likely to conflict with local standards. This is because standards usually allow limited noise from daytime construction activities, and the potential for operational and maintenance noise to create land use conflicts would only occur for particular sites unable to provide sufficient setbacks between the renewable energy project and sensitive areas. Therefore, renewable energy

and transmission development under the Preferred Alternative would require mitigation to reduce noise and vibration impacts.

Impacts in Study Area Lands

Study Area Lands refer to three categories of lands shown on alternative maps: Future Assessment Areas (FAAs), Special Analysis Areas (SAAs) and DRECP Variance Lands.

Future Assessment Areas. Lands within FAAs are neither reserve lands nor DFAs; they are simply areas deferred for future assessment. The future assessment will determine their suitability for renewable energy development or for ecological conservation. If renewable energy development occurs on FAA lands, a Land Use Plan Amendment would not be required. FAAs for each alternative are included and located as shown in Chapter IV.1, Table IV.1-2 and in Volume II, Figure II.3-1. The FAAs represent areas where renewable energy development or inclusion to the reserve design could be implemented through an amendment to the DRECP but additional assessment would be needed.

Because most of the FAAs are presented as "undesignated areas" in the action alternatives, there would be no difference between the FAAs in the Preferred Alternative except that renewable development in an FAA would not require a BLM Land Use Plan Amendment so the environmental review process would be somewhat simpler than if the location were left undesignated. Development of the FAAs would impact noise and vibration as it would within DFAs.

Special Analysis Areas. Two areas are defined as SAAs, representing areas subject to ongoing analysis. These areas (located in the Silurian Valley and just west of Highway 395 in Kern County) have high value for renewable energy development, ecological and cultural conservation, and recreation. SAA lands are expected to be designated in the Final EIR/EIS as either DFAs or included in the reserve design.

DRECP Variance Lands. DRECP Variance Lands represent the BLM Solar PEIS Variance Lands as screened for the DRECP and EIR/EIS based on BLM screening criteria. Covered Activities could be permitted for NCCP purposes only through an NCCP plan amendment. However, development of renewable energy on Variance Lands would not require a BLM Land Use Plan Amendment so the environmental review process would be somewhat simpler than if the location were left undesignated. Development of the DRECP Variance Lands would impact noise and vibration as it would within DFAs.

Impact Reduction Strategies and Mitigation

The implementation of the Plan would result in conservation of some desert lands as well as the development of renewable energy generation and transmission facilities on other

lands. The impacts of the renewable energy development covered by the Plan would be lessened in several ways. First, the Plan incorporates Conservation and Management Actions (CMAs) for each alternative, including specific biological reserve design components and LUPA components. In addition, the implementation of existing laws, orders, regulations, and standards would reduce the impacts of project development. Second, if significant impacts would still result after implementation of CMAs and compliance with applicable laws and regulations, then specific mitigation measures are recommended in this section.

Conservation and Management Actions

The conservation strategy for the Preferred Alternative (presented in Volume II, Section II.3.1.2) defines specific actions that would reduce the impacts of this alternative. The conservation strategy includes a definition of the reserve design and specific CMAs for the Preferred Alternative. While the CMAs were developed for BLM lands only, this analysis assumes that all CMAs would be applied also to nonfederal lands.

The following biological resource CMAs would reduce noise impacts:

AM-PW-13: Implement the following standard practices for noise:

- To the maximum extent feasible locate stationary noise sources away from Covered Species and suitable habitat.
- Schedule construction activities outside of sensitive times for Covered Species (i.e., seasonal restrictions).
- Implement engineering controls on stationary equipment, buildings, and work areas including sound insulation and noise enclosures to reduce the average noise level.
- Use noise controls on standard construction equipment including mufflers to reduce noise.
- Measures to minimize vehicle and construction equipment idling.

Laws and Regulations

Similar to the No Action Alternative, existing laws and regulations will reduce certain impacts of Plan implementation. Relevant regulations are presented in the Regulatory Setting in Volume III. The requirements of relevant laws and regulations are summarized for the No Action Alternative in Section IV.21.3.1.1.1.

Mitigation Measures

After implementation of the CMAs and existing laws and regulations, mitigation measures will be applied to further reduce some of the DRECP's adverse impacts.

Mitigation Measures for Impact NV-1: Plan components would generate noise that would adversely affect sensitive receptors.

NV-1a **Protect sensitive receptors from noise.** Applicants developing renewable energy facilities and transmission systems shall demonstrate that the following requirements are implemented:

1. New renewable energy facilities should be located more than one-half mile from noise-sensitive receptors, including residences, churches, medical care facilities, schools, child care facilities, public parks, public recreation areas, quiet recreation areas, and wildlife or wilderness areas.
2. Applicants should take measurements to assess the existing background noise levels at sites and compare them with the anticipated noise levels associated with the project.
3. Applicants should prepare a noise monitoring and mitigation plan including designs to (a) minimize noise impacts to noise-sensitive receptors, limit increases to less than a 5 to 10 dBA increase above ambient levels, and not exceed local noise standards; (b) address project-generated noise impacts; and (c) acquire lands to serve as buffers around the proposed facilities.

NV-1b **Implement noise reduction techniques.** Applicants developing renewable energy facilities and transmission systems shall implement the following requirements:

1. Limit noisy construction activities (including truck and rail deliveries, pile driving, and blasting) to the least noise-sensitive times of day (such as weekdays only between 7:00 a.m. and 7:00 p.m.) for projects near residential or recreational areas.
2. Consider use of noise barriers such as berms and vegetation to limit ambient noise at plant property lines, especially where noise-sensitive receptors may be present.
3. Ensure all project equipment has the appropriate sound-control devices and shield-impact tools. Use battery-powered forklifts and other facility vehicles and flashing lights instead of audible backup alarms on mobile equipment.
4. Locate stationary construction equipment (such as compressors and generators) as far as practical from nearby residences.

5. If blasting or other noisy activities are required during the construction period, notify nearby residents and the permitting agencies 24 hours in advance.
6. Properly maintain mufflers, brakes, and all loose items on construction and operation-related vehicles to minimize noise and ensure safe operations. Operate trucks as quietly as possible, while considering local conditions. Advise about downshifting and vehicle operations in residential communities to keep truck noise to a minimum.
7. Install mufflers on diesel and gas-driven engine air coolers and exhaust stacks. Equip emergency pressure relief valves and steam blow-down lines with silencers to limit noise levels.
8. Contain project facilities within buildings or other types of effective noise enclosures, when necessary and feasible.
9. Employ engineering controls, including sound-insulated equipment and control rooms, to reduce the average noise level to appropriate levels in normal work areas.

NV-1c **Protect residences from wind turbine noise.** Applicants developing wind energy facilities shall demonstrate that the proposed wind energy conversion system complies with setbacks defined by the lead agency. Minimum setbacks are generally 1,800 feet from each generator to the nearest receptor. For wind energy systems that would occur nearer than 3,000 feet from receptors (including habitable dwellings), acoustical studies shall be prepared to demonstrate compliance with local standards.

IV.21.3.2.1.2 Impacts of the Reserve Design

The reserve design would set aside conservation lands and prohibit renewable energy development in these areas. Because no development would occur on these lands, no noise impacts from these lands would affect sensitive receptors.

IV.21.3.2.2 Impacts of DRECP Land Use Plan Amendment on BLM Land: Preferred Alternative

This section addresses two components of effects of the BLM LUPA: the streamlined development of renewable energy and transmission on BLM land under the LUPA and the impacts of the amended land use plans themselves.

IV.21.3.2.2.1 Impacts from Renewable Energy and Transmission Development on BLM Land

Streamlining renewable energy development on BLM lands within the DFAs would result in the same types of impacts as described in the Plan-wide analysis, and the same mitigation measures are recommended (see Section IV.21.3.2.1).

IV.21.3.2.2.2 Impacts of Changes to BLM Land Designations

The Preferred Alternative LUPA would (1) designate new National Landscape Conservation System (NLCS) lands; (2) designate new ACECs; (3) designate new and expanded Special Recreation Management Areas (SRMAs); (4) define buffer corridors along National Scenic and Historic Trails, and (5) manage lands to protect wilderness characteristics. These changes would generally limit the extent of future development, and impacts would be avoided where possible, minimized, and/or mitigated to the extent practicable.

IV.21.3.2.3 Impacts of Natural Community Conservation Plan: Preferred Alternative

The analysis of Covered Activities under the NCCP is equivalent to the Plan-wide analysis of the interagency alternatives. Reserve design features and other conservation actions under the NCCP alternatives represent more detailed categories of the reserve design under the interagency Plan-wide alternatives. These NCCP differences in reserve design features do not affect nonbiological resources analyzed in this document, and the analysis of reserve design and Conservation and Management Actions under the NCCP is therefore equivalent to the Plan-wide analysis of the interagency alternatives, as described in Section IV.21.3.2.1.

IV.21.3.2.4 Impacts of General Conservation Plan

The impacts of the GCP for the Preferred Alternative would be similar to those defined in Section IV.21.3.2.1 for the Plan-wide analysis, but they would occur on nonfederal lands only.

IV.21.3.2.5 Impacts Outside the Plan Area

IV.21.3.2.5.1 Impacts of Transmission Outside the Plan Area

The noise and vibration impacts caused by development of transmission outside the Plan Area would be the same under all alternatives. These impacts are as described for the No Action Alternative in Section IV.21.3.1.5, Impacts Outside the Plan Area in No Action Alternative.

IV.21.3.2.5.2 Impacts of BLM LUPA Decisions Outside the Plan Area

The Preferred Alternative would result in changes to land designations under the CDCA Plan, both inside and outside the Plan Area. These changes would generally limit the extent of future development and impacts would be avoided where possible, minimized, and/or mitigated to the extent practicable.

IV.21.3.2.6 CEQA Significance Determination for the Preferred Alternative

NV-1: Plan components would generate noise that would adversely affect sensitive receptors. Development of renewable energy technologies and transmission would result in short-term construction-related activities and long-term operation-related activities that increase noise levels in the vicinity of each project under the Preferred Alternative. The potential for a significant noise impact exists where the noise of a given project plus the background ambient noise level may exceed the background by more than 5 dBA at the nearest sensitive receptor. However, impacts depend on the particular site-specific background ambient noise levels and the distances that separate sensitive land uses from the renewable energy development. For example, within 300 feet of solar project boundaries, within 1,800 feet of wind turbines, or within 500 feet of geothermal facilities, receptors could experience a substantial permanent increase in ambient noise levels. To avoid noise levels that are excessive or substantially above ambient levels, Mitigation Measures NV-1a, NV-1b, and NV-1c would ensure early identification of sensitive receptors, establish control practices for noise sources, and set requirements for setback and buffer distances. Mitigation Measures NV-1a, NV-1b, and NV-1c (see Section IV.21.3.2.1.1) would reduce this impact to less than significant.

NV-2: Plan components would generate ground-borne vibrations that adversely affect sensitive receptors. Under the Preferred Alternative, renewable energy technologies and transmission would result in short-term construction-related and long-term operation-related ground-borne vibration impacts if sensitive receptors are not provided a sufficient setback or buffer distance from activities. Because project-related vibration would not be generated above the threshold of detectability beyond renewable energy project site boundaries, Impact NV-2 would be less than significant.

NV-3: Plan components would generate noise or ground-borne vibration levels in conflict with local standards. Noise and vibrations generated by renewable energy technologies and transmission would potentially conflict with local noise and vibration standards under the Preferred Alternative. Local standards usually allow limited noise from daytime construction activities, and the potential for operational and maintenance noise to create land use conflicts would only occur for particular sites unable to provide sufficient setbacks between the renewable energy project and sensitive areas. To ensure that

development activities occur in a manner that avoids causing noise or vibration levels in excess of local standards, Mitigation Measures NV-1a, NV-1b, and NV-1c (see Section IV.21.3.2.1.1) would reduce this impact to less than significant.

IV.21.3.2.7 Comparison of the Preferred Alternative With No Action Alternative

Chapter IV.27 presents a comparison of all action alternatives and the No Action Alternative across all disciplines. This section summarizes the comparison of the Preferred Alternative with the No Action Alternative.

IV.21.3.2.7.1 Preferred Alternative Compared With No Action Alternative for Plan-wide DRECP

Compared with the No Action Alternative, the Preferred Alternative would focus renewable energy-related activities and the associated noise and vibration impacts to DFAs. Generation development would be focused on disturbed lands in the West Mojave, Imperial Valley, eastern Riverside County, and around Barstow, with smaller areas in the Owens Valley and on the Nevada border. The DFAs would be aligned with existing and planned transmission networks and would provide moderate development flexibility. Given that noise and vibration impacts would be localized to areas in the vicinity of construction and operation activities, the impacts within the ecoregion subareas are described below for the Preferred Alternative. Under the Preferred Alternative, no DFAs would be designated in the Piute Valley and Sacramento Mountains or the Panamint Death Valley ecoregion subareas.

Solar

There would be 118,000 acres of solar and distributed generation energy projects across the ecoregion subareas for the Preferred Alternative. The Imperial Borrego Valley would have the largest area impacted, followed by the West Mojave and Eastern Slopes and the Cadiz Valley and Chocolate Mountains. Solar projects are anticipated for all ecoregion subareas with the exception of the Panamint Death Valley and Piute Valley and Sacramento Mountains ecoregion subareas.

Therefore, the Preferred Alternative would cause noise impacts to all ecoregion subareas, with the exception of Panamint Death Valley and Piute Valley and Sacramento Mountains ecoregion subareas. Noise impacts to the ecoregion subareas would occur during both construction and operation within and near the project boundaries.

Typical noise sources associated with solar facilities operations and maintenance include employee vehicle access to the site, power inverters, tracking motors on individual panels, and maintenance activities on the panels such as cleaning and repair (see Section IV.21.2, Typical Impacts Common to All Alternatives). Without specific development details, noise impacts may occur at any location within the boundaries and along travel routes. In

comparison to the Preferred Alternative, the No Action Alternative would not focus activities to any particular areas.

Wind

There would be 9,000 acres of wind energy projects across the ecoregion subareas for the Preferred Alternative. The West Mojave and Eastern Slopes ecoregion subarea would have the largest impacted area, followed by the Cadiz Valley and Chocolate Mountains ecoregion subarea and Pinto Lucerne Valley ecoregion subarea. There would be DFAs for wind energy development for the other ecoregion subareas aside from the four previously approved BLM projects. Therefore, noise impacts to the West Mojave and Eastern Slopes, Cadiz Valley and Chocolate Mountains, and Pinto Lucerne Valley ecoregion subareas would occur during construction and operation of any wind projects within the DFAs.

Typical noise sources associated with wind energy facilities operations and maintenance include employee vehicles accessing the site, turbine noise, and maintenance activities of the turbines, including repair (see Section IV.21.2, Typical Impacts Common to All Alternatives). As with the No Action Alternative, under the Preferred Alternative, wind energy facilities would need to be designed to demonstrate compliance with the applicable local noise standards. In comparison to the Preferred Alternative, the No Action Alternative would not focus activities to any particular areas.

Geothermal

There would be 17,000 acres of DFAs for geothermal energy development across two eco-region subareas for the Preferred Alternative. Under the Preferred Alternative, the Imperial Borrego Valley and the Owens River Valley ecoregion subareas would have noise impacts from construction and operational activities associated with development of geothermal projects within DFAs. There would be no noise impacts as a result of geothermal DFAs in the other ecoregion subareas.

Typical geothermal operational activities would include new sources of noise, and maintenance of geothermal fields may require ongoing drilling of new wells over the life of the project (see Section IV.21.2, Typical Impacts Common to All Alternatives). However, as with the No Action Alternative, under the Preferred Alternative, geothermal projects would need to be designed to demonstrate compliance with the applicable local noise standards. In comparison to the Preferred Alternative, the No Action Alternative would not focus activities to any particular areas.

IV.21.3.2.7.2 Preferred Alternative Compared With No Action Alternative for the BLM Land Use Plan Amendment

The long-term impacts under the No Action Alternative occur across 1.38% of the conservation categories listed, and the long-term acreage impacts under the Preferred Alternative occur across 1.05% of the conservation categories listed.

IV.21.3.2.7.3 Preferred Alternative Compared With No Action Alternative for NCCP

The impacts of the NCCP for the Preferred Alternative are the same as those defined in Section IV.21.3.2.1 for the Plan-wide analysis. As a result, the comparison of the Preferred Alternative with the No Action Alternative for the NCCP is the same as described for the Plan-wide DRECP.

IV.21.3.2.7.4 Preferred Alternative Compared With No Action Alternative for the GCP

The impacts of the GCP under the No Action Alternative and the Preferred Alternative would be similar to the Plan-wide analyses but would occur on nonfederal lands only. Under the No Action Alternative, the total footprint of renewable energy development on nonfederal lands would be similar, but development would likely cause noise and vibration impacts from sites dispersed across the Plan Area. Under the Preferred Alternative, the noise and vibration impacts would occur at and near development sites within the DFAs.

IV.21.3.3 Alternative 1

IV.21.3.3.1 Plan-wide Impacts of Implementing the DRECP: Alternative 1

The primary driver of Alternative 1 is confining renewable energy development to low-conflict disturbed lands, thereby providing the lowest conflicts between biological and nonbiological resources. Development flexibility would be limited as a result. The total acreage of DFAs in Alternative 1 is 1,070,000 compared to the Preferred Alternative's 2,024,000 acres.

Alternative 1 results in long-term impacts of 148,000 acres with 129,000 acres from solar and distributed generation, 2,000 acres from wind, 17,000 from geothermal, and additional acreage from transmission, which includes substations and gen-ties within the Plan Area.

IV.21.3.3.1.1 Plan-wide Impacts and Mitigation Measures from Renewable Energy and Transmission Development

Impact Assessment

Impact NV-1: Plan components would generate noise that would adversely affect sensitive receptors.

Under Alternative 1, all of the plan components from the renewable energy technologies and transmission would result in short-term impacts from construction activities and long-term noise impacts from operation of Plan components. The area affected by the direct long-term noise impact would be 148,000 acres throughout the Plan Area.

Alternative 1 covers the same area as the No Action Alternative, which would affect the same sensitive receptor communities as described in Section IV.21.3.1.1.1. The areas with renewable energy development under Alternative 1 would generate short- and long-term noise impacts and would require mitigation as described for the Preferred Alternative in Section IV.21.3.2.1.1.

Impact NV-2: Plan components would generate ground-borne vibrations that adversely affect sensitive receptors.

All Plan components included in renewable energy technologies and transmission would result in construction-related vibration impacts, and some technologies would result in operation vibration impacts under Alternative 1. Typical vibration levels would have a low probability of being above the threshold of detectability and would not require mitigation as described under the Impact NV-2 discussion for the Preferred Alternative in Section IV.21.3.2.1.1.

Impact NV-3: Plan components would generate noise or ground-borne vibration levels in conflict with local standards.

Plan components included in renewable energy technologies and transmission would result in noise and vibration levels that could potentially conflict with local noise and vibration standards under Alternative 1. Therefore, development would require mitigation as described for the Preferred Alternative in Section IV.21.3.2.1.1.

Impacts in Study Area Lands

Future Assessment Areas. FAAs do not apply to Alternative 1.

Special Analysis Areas. Designating the SAAs as conservation would have no impact on this resource. Impacts would be the same as those explained for the Plan-wide reserve design in the section "Impacts From the Reserve Design."

DRECP Variance Lands. DRECP Variance Lands represent the BLM Solar PEIS Variance Lands as screened for the DRECP and EIR/EIS based on BLM screening criteria. Covered Activities could be permitted for NCCP purposes only through an NCCP plan amendment. However, development of renewable energy on Variance Lands would not require a BLM Land Use Plan Amendment so the environmental review process would be somewhat simpler than if the location were left undesignated. Development of the DRECP Variance Lands would impact noise and vibration as it would within DFAs.

Impact Reduction Strategies and Mitigation

The implementation of the Plan would result in conservation of some desert lands as well as the development of renewable energy generation and transmission facilities on other lands. The impacts of the renewable energy development covered by the Plan would be lessened in several ways. First, the Plan incorporates Conservation and Management Actions (CMAs) for each alternative, including specific biological reserve design components and LUPA components. Also, the implementation of existing laws, orders, regulations, and standards would reduce the impacts of project development. If significant impacts would still result after implementation of CMAs and compliance with applicable laws and regulations, then mitigation measures are recommended similar to those of the Preferred Alternative.

Conservation and Management Actions

The conservation strategy for Alternative 1 (presented in Volume II, Section II.4.1.2) defines specific actions that would reduce the impacts of this alternative. The conservation strategy includes a definition of the reserve design and specific CMAs for the Preferred Alternative. While the CMAs were developed for BLM lands only, this analysis assumes that all CMAs would be applied also to nonfederal lands.

Laws and Regulations

Similar to the No Action Alternative, existing laws and regulations will reduce certain impacts of Plan implementation. Relevant regulations are presented in the Regulatory Setting in Volume III. The requirements of relevant laws and regulations are summarized for the No Action Alternative in Section IV.21.3.1.1.1.

Mitigation Measures

After implementation of the CMAs and existing laws and regulations, mitigation measures will be applied to further reduce some of the DRECP's adverse impacts. The types of impacts for Alternative 1 would be the same as described under the Preferred Alternative, therefore the approach to mitigation would also be the same (see Section IV.21.3.2.1.1 for the complete list of mitigation measures).

IV.21.3.3.1.2 Impacts from Reserve Design

The reserve design would set aside conservation lands and prohibit renewable energy development in these areas. Because no development would occur on these lands, no noise impacts from these lands would affect sensitive receptors.

IV.21.3.3.2 Impacts of DRECP Land Use Plan Amendment on BLM Land: Alternative 1

This section addresses two components of effects of the BLM LUPA: the streamlined development of renewable energy and transmission on BLM land under the LUPA and the impacts of the amended land use plans themselves.

IV.21.3.3.2.1 Impacts from Renewable Energy and Transmission Development on BLM Land

Development of renewable energy and transmission projects on BLM land would have the same types of impacts as those described in the Plan-wide analysis (Section IV.21.3.3.1.1).

IV.21.3.3.2.2 Impacts of Changes to BLM Land Designations

The LUPA associated with Alternative 1 would (1) designate new NLCS lands; (2) designate new ACECs; (3) designate new and expanded SRMAs; and (4) define buffer corridors along National Scenic and Historic Trails. These changes would generally limit the extent of future development, and impacts would be avoided where possible, minimized, and/or mitigated to the extent practicable.

IV.21.3.3.3 Impacts of Natural Community Conservation Plan: Alternative 1

The impacts of the NCCP for Alternative 1 would be the same as those defined in Section IV.21.3.2.1 for the Plan-wide analysis.

The Plan-wide impacts quantified and discussed in the analysis in Section IV.21.3.2.1 serve as the impact analysis for the NCCP under Alternative 1.

IV.21.3.3.4 Impacts of General Conservation Plan: Alternative 1

The impacts of the GCP for Alternative 1 would be similar to those defined in Section IV.21.3.2.1 for the Plan-wide analysis, but they would occur on nonfederal lands only.

IV.21.3.3.5 Impacts Outside the Plan Area: Alternative 1

IV.21.3.3.5.1 Impacts of Transmission Outside the Plan Area

The noise and vibration impacts caused by development of transmission outside the Plan Area would be the same under all alternatives. These impacts are as described for the No Action Alternative in Section IV.21.3.1.5 (Impacts Outside the Plan Area in No Action Alternative).

IV.21.3.3.5.2 Impacts of BLM LUPA Decisions Outside the Plan Area

Alternative 1 would result in changes to land designations under the CDCA Plan, both inside and outside the Plan Area. These changes would generally limit the extent of future development and impacts would be avoided where possible, minimized, and/or mitigated to the extent practicable.

IV.21.3.3.6 CEQA Significance Determination for Alternative 1

NV-1: Plan components would generate noise that would adversely affect sensitive receptors. Development of renewable energy technologies and transmission would increase noise levels in the vicinity of each project under Alternative 1. The potential for a significant noise impact exists, although impacts depend on the particular site-specific background ambient noise levels and the distances that separate sensitive land uses from the renewable energy development. This analysis identifies mitigation to avoid noise levels that are excessive or substantially above ambient levels. As described in Section IV.21.3.2.1.1, Mitigation Measures NV-1a, NV-1b, and NV-1c would reduce this impact to less than significant.

NV-2: Plan components would generate ground-borne vibrations that adversely affect sensitive receptors. Renewable energy technologies and transmission would result in short-term construction-related and long-term operation-related ground-borne vibration impacts under Alternative 1. Because project-related vibration would not be generated above the threshold of detectability beyond renewable energy project site boundaries, Impact NV-2 would be less than significant.

NV-3: Plan components would generate noise or ground-borne vibration levels in conflict with local standards. Noise and vibrations generated by renewable energy tech-

nologies and transmission would potentially conflict with local noise and vibration standards under Alternative 1. Local standards usually allow limited noise from daytime construction activities, and the potential for operational and maintenance noise to create land use conflicts would only occur for particular sites unable to provide sufficient setbacks between the renewable energy project and sensitive areas. As described in Section IV.21.3.2.1.1, Mitigation Measures NV-1a, NV-1b, and NV-1c would reduce this impact to less than significant.

IV.21.3.3.7 Comparison of Alternative 1 With Preferred Alternative

Chapter IV.27 presents a comparison of all action alternatives and the No Action Alternative across all disciplines. This section summarizes the comparison of Alternative 1 with the Preferred Alternative.

IV.21.3.3.7.1 Alternative 1 Compared With Preferred Alternative for Plan-wide DRECP

Alternative 1 results in long-term impacts of 148,000 acres with 129,000 acres from solar projects and distributed generation, 2,000 acres from wind projects, 17,000 acres from geothermal projects, and additional acreage from associated transmission, which includes substations and gen-ties within the Plan Area.

In comparison to the Preferred Alternative, Alternative 1 would result in 11,000 more acres of solar and distributed generation, 7,000 fewer acres of wind generation, and the same acreage of geothermal generation.

Alternative 1 would result in an additional 4,000 acres of impacts compared to the Preferred Alternative.

Alternative 1 would not have impacts near California City, Barstow, Brawley, Imperial, El Centro, and Holtville, where sensitive receptors would experience impacts under the Preferred Alternative. The Preferred Alternative and Alternative 1 both have CMAs.

Alternative 1 results in more development and greater impacts in the Imperial Borrego Valley, Mojave and Silurian Valley, Owens River Valley, Pinto Lucerne Valley and Eastern Slopes, and Providence and Bullion Mountains ecoregion subareas than the Preferred Alternative.

The types of noise and vibration levels caused by renewable energy development under Alternative 1 would result in similar impacts as described under the Preferred Alternative. Therefore, the mitigation measures would be the same for Alternative 1 and the Preferred Alternative.

IV.21.3.3.7.2 Alternative 1 Compared With Preferred Alternative for the BLM Land Use Plan Amendment

The noise-impacted areas under Alternative 1 are similar to those under the Preferred Alternative.

IV.21.3.3.7.3 Alternative 1 Compared With Preferred Alternative for NCCP

The impacts of the NCCP for Alternative 1 are the same as those defined in Section IV.21.3.2.1 for the Plan-wide analysis. As a result, the comparison of Alternative 1 with the Preferred Alternative for the NCCP is the same as described for the Plan-wide DRECP.

IV.21.3.3.7.4 Alternative 1 Compared With Preferred Alternative for the GCP

The impacts of the GCP under Alternative 1 and the Preferred Alternative would be similar to those defined in Section IV.21.3.2.1 for the Plan-wide analysis but would occur on nonfederal lands only.

IV.21.3.4 Alternative 2

IV.21.3.4.1 Plan-wide Impacts of Implementing the DRECP: Alternative 2

Under Alternative 2, renewable energy-related activities covered by the Plan are confined to DFAs. The footprint would encompass approximately 135,000 acres for all the technologies and transmission. Alternative 2 emphasizes renewable energy development that is geographically balanced. Nevertheless, like the Preferred Alternative, there is the potential for noise impacts from renewable energy development within the DFAs, from both construction and operation of the renewable energy developments and transmission.

IV.21.3.4.1.1 Plan-wide Impacts and Mitigation Measures from Renewable Energy and Transmission Development

Impact Assessment

Impact NV-1: Plan components would generate noise that would adversely affect sensitive receptors.

Under Alternative 2, all of the plan components from the renewable energy technologies and transmission would result in short-term impacts from construction activities and long-term noise impacts from operation of Plan components. The area affected by the direct long-term noise impact would be 135,000 acres throughout the Plan Area.

Alternative 2 covers the same area as the No Action Alternative, which would affect the same sensitive receptor communities as described in Section IV.21.3.1.1.1. The areas with renewable energy development under Alternative 2 would generate short- and long-term noise impacts and would require mitigation as described for the Preferred Alternative in Section IV.21.3.2.1.1.

Impact NV-2: Plan components would generate ground-borne vibrations that adversely affect sensitive receptors.

All Plan components included in renewable energy technologies and transmission would result in construction-related vibration impacts, and some technologies would result in operation vibration impacts under Alternative 2. Typical vibration levels would have a low probability of being above the threshold of detectability and would not require mitigation as described under the Impact NV-2 discussion for the Preferred Alternative in Section IV.21.3.2.1.1.

Impact NV-3: Plan components would generate noise or ground-borne vibration levels in conflict with local standards.

Plan components included in renewable energy technologies and transmission would result in noise and vibration levels that could potentially conflict with local noise and vibration standards under Alternative 2. Therefore, development would require mitigation as described for the Preferred Alternative in Section IV.21.3.2.1.1.

Impacts in Study Area Lands

Future Assessment Areas. Lands within FAAs are neither reserve lands nor DFAs; they are simply areas that are deferred for future assessment. The future assessment will determine their suitability for renewable energy development or for ecological conservation. If renewable energy development occurs on FAA lands, a Land Use Plan Amendment would not be required. FAAs for each alternative are included and located as shown in Chapter IV.1, Table IV.1-2 and Volume II, Figure II.5-1 for Alternative 2. The FAAs represent areas where renewable energy development or inclusion to the reserve design could be implemented through an amendment to the DRECP but additional assessment would be needed.

Because most of the FAAs are presented as "undesignated areas" in the action alternatives, there would be no difference between the FAAs in the Preferred Alternative except that renewable development in an FAA would not require a BLM Land Use Plan Amendment so the environmental review process would be somewhat simpler than if the location were left undesignated. Development of the FAAs would impact noise and vibration as it would within DFAs.

Special Analysis Areas. Designating the SAAs as development would result in impacts similar to those identified for the DFAs for the Plan-wide Impacts.

DRECP Variance Lands. DRECP Variance Lands represent the BLM Solar PEIS Variance Lands as screened for the DRECP and EIR/EIS based on BLM screening criteria. Covered Activities could be permitted for NCCP purposes only through an NCCP plan amendment. However, development of renewable energy on Variance Lands would not require a BLM Land Use Plan Amendment so the environmental review process would be somewhat simpler than if the location were left undesignated. Development of the DRECP Variance Lands would result in noise and vibration impacts as they would within DFAs.

Impact Reduction Strategies and Mitigation

The implementation of the Plan would result in conservation of some desert lands as well as the development of renewable energy generation and transmission facilities on other lands. The impacts of the renewable energy development covered by the Plan would be lessened in several ways. First, the Plan incorporates Conservation and Management Actions (CMAs) for each alternative, including specific biological reserve design components and LUPA components. In addition, the implementation of existing laws, orders, regulations, and standards would reduce the impacts of project development. If significant impacts would still result after implementation of CMAs and compliance with applicable laws and regulations, then mitigation measures are recommended similar to those of the Preferred Alternative.

Conservation and Management Actions

The conservation strategy for Alternative 2 (presented in Volume II, Section II.5.1.2) defines specific actions that would reduce the impacts of this alternative. The conservation strategy includes a definition of the reserve design and specific CMAs for the Preferred Alternative. While the CMAs were developed for BLM lands only, this analysis assumes that all CMAs would be applied also to nonfederal lands.

Laws and Regulations

Similar to the No Action Alternative, existing laws and regulations will reduce certain impacts of Plan implementation. Relevant regulations are presented in the Regulatory Setting in Volume III. The requirements of relevant laws and regulations are summarized for the No Action Alternative in Section IV.21.3.1.1.1.

Mitigation Measures

After implementation of the CMAs and existing laws and regulations, mitigation measures will be applied to further reduce some of the DRECP's adverse impacts. The types of impacts for Alternative 2 would be the same as described under the Preferred Alternative, therefore the approach to mitigation would also be the same (see Section IV.21.3.2.1.1 for the complete list of mitigation measures).

IV.21.3.4.1.2 Impacts from Reserve Design

The reserve design would set aside conservation lands and prohibit renewable energy development in these areas. Because no development would occur on these lands, no noise impacts from these lands would affect sensitive receptors.

IV.21.3.4.2 Impacts of DRECP Land Use Plan Amendment on BLM Land: Alternative 2

This section addresses two components of effects of the BLM LUPA: the streamlined development of renewable energy and transmission on BLM land under the LUPA and the impacts of the amended land use plans themselves.

IV.21.3.4.2.1 Impacts from Renewable Energy and Transmission Development on BLM Land

Development of renewable energy and transmission projects on BLM land would have the same types of impacts as those described in the Plan-wide analysis (Section IV.21.3.4.1.1), and the same mitigation measures are recommended.

IV.21.3.4.2.2 Impacts of Changes to BLM Land Designations

The LUPA associated with Alternative 2 includes designation of new NLCS lands and ACECs, designation of new and expanded SRMAs, and definition of buffer corridors along National Scenic and Historic Trails. These changes would generally limit the extent of future development, and impacts would be avoided where possible, minimized, and/or mitigated to the extent practicable.

IV.21.3.4.3 Impacts of Natural Community Conservation Plan: Alternative 2

The impacts of the NCCP for Alternative 2 would be the same as those defined in Section IV.21.3.2.1 for the Plan-wide analysis.

IV.21.3.4.4 Impacts of General Conservation Plan

The impacts of the GCP for Alternative 2 would be similar to those defined in Section IV.21.3.2.1 for the Plan-wide analysis, but they would occur on nonfederal lands only.

IV.21.3.4.5 Impacts Outside the Plan Area

IV.21.3.4.5.1 Impacts of Transmission Outside the Plan Area

The noise and vibration impacts caused by development of transmission outside the Plan Area would be the same under all alternatives because outside the Plan Area, the same transmission would be needed. These impacts are as described for the No Action Alternative in Section IV.21.3.1.5, Impacts Outside the Plan Area in No Action Alternative.

IV.21.3.4.5.2 Impacts of BLM LUPA Decisions Outside the Plan Area

Alternative 2 would result in changes to land designations under the CDCA Plan, both inside and outside the Plan Area. These changes would generally limit the extent of future development and impacts would be avoided where possible, minimized, and/or mitigated to the extent practicable.

IV.21.3.4.6 CEQA Significance Determination for Alternative 2

NV-1: Plan components would generate noise that would adversely affect sensitive receptors. Development of renewable energy technologies and transmission would increase noise levels in the vicinity of each project under Alternative 2. The potential for a significant noise impact exists, although impacts depend on the particular site-specific background ambient noise levels and the distances that separate sensitive land uses from the renewable energy development. This analysis identifies mitigation to avoid noise levels that are excessive or substantially above ambient levels. As described in Section IV.21.3.2.1.1, Mitigation Measures NV-1a, NV-1b, and NV-1c would reduce this impact to less than significant.

NV-2: Plan components would generate ground-borne vibrations that adversely affect sensitive receptors. Renewable energy technologies and transmission would result in short-term construction-related and long-term operation-related ground-borne vibration impacts under Alternative 2. Because project-related vibration would not be generated above the threshold of detectability beyond renewable energy project site boundaries, Impact NV-2 would be less than significant.

NV-3: Plan components would generate noise or ground-borne vibration levels in conflict with local standards. Noise and vibrations generated by renewable energy tech-

nologies and transmission would potentially conflict with local noise and vibration standards under Alternative 2. Local standards usually allow limited noise from daytime construction activities, and the potential for operational and maintenance noise to create land use conflicts would only occur for particular sites unable to provide sufficient setbacks between the renewable energy project and sensitive areas. As described in Section IV.21.3.2.1.1, Mitigation Measures NV-1a, NV-1b, and NV-1c would reduce this impact to less than significant.

IV.21.3.4.7 Comparison of Alternative 2 With Preferred Alternative

Chapter IV.27 presents a comparison of all action alternatives and the No Action Alternative across all disciplines. This section summarizes the comparison of Alternative 2 with the Preferred Alternative.

IV.21.3.4.7.1 Alternative 2 Compared With Preferred Alternative for Plan-wide DRECP

Alternative 2 results in noise impacts to 135,000 acres with 102,000 acres impacted from solar projects and distributed generation, 15,000 acres from wind projects, 17,000 acres from geothermal projects, and additional acreage from associated transmission, which includes substations and gen-ties within the Plan Area.

In comparison to the Preferred Alternative, Alternative 2 would result in 16,000 fewer acres of solar and distributed generation, 6,000 more acres of wind generation, and the same acreage of geothermal generation.

Alternative 2 would result in 9,000 fewer acres of impacts compared to the Preferred Alternative.

The types of noise and vibration levels caused by renewable energy development under Alternative 2 would result in similar impacts as those from the Preferred Alternative. Therefore, the mitigation measures would be the same between Alternative 2 and the Preferred Alternative.

IV.21.3.4.7.2 Alternative 2 Compared With Preferred Alternative for the BLM Land Use Plan Amendment

The noise-impacted areas under Alternative 2 are similar to those under the Preferred Alternative.

IV.21.3.4.7.3 Alternative 2 Compared With Preferred Alternative for NCCP

The impacts of the NCCP for Alternative 2 are the same as those defined in Section IV.21.3.2.1 for the Plan-wide analysis. As a result, the comparison of Alternative 2 with the Preferred Alternative for the NCCP is the same as described for the Plan-wide DRECP.

IV.21.3.4.7.4 Alternative 2 Compared With Preferred Alternative for the GCP

The impacts of the GCP under Alternative 2 and the Preferred Alternative would be similar to those defined in Section IV.21.3.2.1 for the Plan-wide analyses but would occur on nonfederal lands only.

IV.21.3.5 Alternative 3

IV.21.3.5.1 Plan-wide Impacts of Implementing the DRECP: Alternative 3

IV.21.3.5.1.1 Plan-wide Impacts and Mitigation Measures from Renewable Energy and Transmission Development

Alternative 3 has the common goal of the other alternatives in confining renewable energy development to low-conflict disturbed lands, thereby providing the lowest conflicts between biological and nonbiological resources. The DFAs under Alternative 3 are dispersed with less development planned for the Cadiz Valley and Chocolate Mountain, Imperial Borrego Valley, and West Mojave and Eastern Slopes ecoregion subareas. Minimum development flexibility would also result. The total acreage of DFAs in Alternative 3 is 1,405,000 (compared to the Preferred Alternative's 2,024,000 acres).

Alternative 3 results in long-term impacts of 150,000 acres with 129,000 acres from solar and distributed generation, 5,000 acres from wind, 17,000 acres from geothermal, and additional acreage from transmission, which includes substations and gen-ties within the Plan Area.

Impact Assessment

Impact NV-1: Plan components would generate noise that would adversely affect sensitive receptors.

Under Alternative 3, all of the Plan components from the renewable energy technologies and transmission would result in short-term impacts from construction activities and long-term noise impacts from operation of Plan components. The area affected by the direct long-term noise impact would be 150,000 acres throughout the Plan Area.

Alternative 3 covers the same area as the No Action Alternative, which would affect the same sensitive receptor communities as described in Section IV.21.3.1.1.1. The areas with renewable energy development under Alternative 3 would generate short- and long-term noise impacts and would require mitigation as described for the Preferred Alternative in Section IV.21.3.2.1.1.

Impact NV-2: Plan components would generate ground-borne vibrations that adversely affect sensitive receptors.

All Plan components included in renewable energy technologies and transmission would result in construction-related vibration impacts. Some technologies would result in operation vibration impacts under Alternative 3. Typical vibration levels would have a low probability of being above the threshold of detectability and would not require mitigation as described under the Impact NV-2 discussion for the Preferred Alternative in Section IV.21.3.2.1.1.

Impact NV-3: Plan components would generate noise or ground-borne vibration levels in conflict with local standards.

Plan components included in renewable energy technologies and transmission would result in noise and vibration levels that could potentially conflict with local noise and vibration standards under Alternative 3. Therefore, development would require mitigation as described for the Preferred Alternative in Section IV.21.3.2.1.1.

Impacts in Study Area Lands

Future Assessment Areas. Lands within FAAs are neither reserve lands nor DFAs; they are simply areas that are deferred for future assessment. The future assessment will determine their suitability for renewable energy development or for ecological conservation. If renewable energy development occurs on FAA lands, a Land Use Plan Amendment would not be required. FAAs for each alternative are included and located as shown in Chapter IV.1, Table IV.1-2 and Volume II, Figure II.6-1 for Alternative 3. The FAAs represent areas where renewable energy development or inclusion to the reserve design could be implemented through an amendment to the DRECP but additional assessment would be needed.

Because most of the FAAs are presented as "undesignated areas" in the action alternatives, there would be no difference between the FAAs in the Preferred Alternative except that renewable development in an FAA would not require a BLM Land Use Plan Amendment so the environmental review process would be somewhat simpler than if the location were left undesignated. Development of the FAAs would impact noise and vibration as it would within DFAs.

Special Analysis Areas. Designating the SAAs as conservation would have no impact on this resource. Impacts would be the same as those explained for the Plan-wide reserve design in Section IV.21.2.2, Impacts of the Reserve Design.

DRECP Variance Lands. DRECP Variance Lands represent the BLM Solar PEIS Variance Lands as screened for the DRECP and EIR/EIS based on BLM screening criteria. Covered Activities could be permitted for NCCP purposes only through an NCCP plan amendment. However, development of renewable energy on Variance Lands would not require a BLM Land Use Plan Amendment so the environmental review process would be somewhat simpler than if the location were left undesignated. Development of the DRECP Variance Lands would impact noise and vibration as it would within DFAs.

Impact Reduction Strategies and Mitigation

The implementation of the Plan would result in conservation of some desert lands as well as the development of renewable energy generation and transmission facilities on other lands. The impacts of the renewable energy development covered by the Plan would be lessened in several ways. First, the Plan incorporates Conservation and Management Actions (CMAs) for each alternative, including specific biological reserve design components and LUPA components. Also, the implementation of existing laws, orders, regulations, and standards would reduce the impacts of project development. If significant impacts would still result after implementation of CMAs and compliance with applicable laws and regulations, then mitigation measures are recommended similar to those of the Preferred Alternative.

Conservation and Management Actions

The conservation strategy for Alternative 3 (presented in Volume II, Section II.6.1.2) defines specific actions that would reduce the impacts of this alternative. The conservation strategy includes a definition of the reserve design and specific CMAs for the Preferred Alternative. While the CMAs were developed for BLM lands only, this analysis assumes that all CMAs would be applied also to nonfederal lands.

Laws and Regulations

Similar to the No Action Alternative, existing laws and regulations will reduce certain impacts of Plan implementation. Relevant regulations are presented in the Regulatory Setting in Volume III. The requirements of relevant laws and regulations are summarized for the No Action Alternative in Section IV.21.3.1.1.1.

Mitigation Measures

After implementation of the CMAs and existing laws and regulations, mitigation measures will be applied to further reduce some of the DRECP's adverse impacts. The types of impacts for Alternative 3 would be the same as with the Preferred Alternative, therefore the approach to mitigation would also be the same (see Section IV.21.3.2.1.1 for the complete list of mitigation measures).

IV.21.3.5.1.2 Impacts from Reserve Design

The reserve design would set aside conservation lands and prohibit renewable energy development in these areas. Because no development would occur on these lands, no noise impacts from these lands would affect sensitive receptors.

IV.21.3.5.2 Impacts of DRECP Land Use Plan Amendment on BLM Land: Alternative 3

This section addresses two components of effects of the BLM LUPA: the streamlined development of renewable energy and transmission on BLM land under the LUPA and the impacts of the amended land use plans themselves.

IV.21.3.5.2.1 Impacts from Renewable Energy and Transmission Development on BLM Land

Development of renewable energy and transmission projects on BLM land would have the same types of impacts as those described in the Plan-wide analysis (Section IV.21.3.5.1.1).

IV.21.3.5.2.2 Impacts of Changes to BLM Land Designations

The LUPA associated with Alternative 3 includes designation of new NLCS lands and ACECs, designation of new and expanded SRMAs, and definition of buffer corridors along National Scenic and Historic Trails. These changes would generally limit the extent of future development, and impacts would be avoided where possible, minimized, and/or mitigated to the extent practicable.

IV.21.3.5.3 Impacts of Natural Community Conservation Plan: Alternative 3

The impacts of the NCCP for Alternative 3 would be the same as those defined in Section IV.21.3.2.1 for the Plan-wide analysis.

The Plan-wide impacts discussed in the analysis in Section IV.21.3.2.1 serve as the impact analysis for the NCCP under Alternative 3.

IV.21.3.5.4 Impacts of General Conservation Plan: Alternative 3

The impacts of the GCP for Alternative 3 would be similar to those defined in Section IV.21.3.2.1 for the Plan-wide analysis, but they would occur on nonfederal lands only.

The Plan-wide impacts discussed in the analysis in Section IV.21.3.2.1 serve as the impact analysis for the GCP under Alternative 3.

IV.21.3.5.5 Impacts Outside the Plan Area

IV.21.3.5.5.1 Impacts of Transmission Outside the Plan Area

The noise and vibration impacts caused by development of transmission outside the Plan Area would be the same under all alternatives. These impacts are as described for the No Action Alternative in Section IV.21.3.1.5, Impacts Outside the Plan Area in No Action Alternative.

IV.21.3.5.5.2 Impacts of BLM LUPA Decisions Outside the Plan Area

Alternative 3 would result in changes to land designations under the CDCA Plan, both inside and outside the Plan Area. These changes would generally limit the extent of future development and impacts would be avoided where possible, minimized, and/or mitigated to the extent practicable.

IV.21.3.5.6 CEQA Significance Determination for Alternative 3

NV-1: Plan components would generate noise that would adversely affect sensitive receptors. Development of renewable energy technologies and transmission would increase noise levels in the vicinity of each project under Alternative 3. The potential for a significant noise impact exists, although impacts depend on the particular site-specific background ambient noise levels and the distances that separate sensitive land uses from the renewable energy development. This analysis identifies mitigation to avoid noise levels that are excessive or substantially above ambient levels. As described in Section IV.21.3.2.1.1, Mitigation Measures NV-1a, NV-1b, and NV-1c would reduce this impact to less than significant.

NV-2: Plan components would generate ground-borne vibrations that adversely affect sensitive receptors. Renewable energy technologies and transmission would result in short-term construction-related and long-term operation-related ground-borne vibration impacts under Alternative 3. Because project-related vibration would not be generated above the threshold of detectability beyond renewable energy project site boundaries, Impact NV-2 would be less than significant.

NV-3: Plan components would generate noise or ground-borne vibration levels in conflict with local standards. Noise and vibrations generated by renewable energy technologies and transmission would potentially conflict with local noise and vibration standards under Alternative 3. Local standards usually allow limited noise from daytime construction activities, and the potential for operational and maintenance noise to create land use conflicts would only occur for particular sites unable to provide sufficient setbacks between the renewable energy project and sensitive areas. As described in Section IV.21.3.2.1.1, Mitigation Measures NV-1a, NV-1b, and NV-1c would reduce this impact to less than significant.

IV.21.3.5.7 Comparison of Alternative 3 With Preferred Alternative

Chapter IV.27 presents a comparison of all action alternatives and the No Action Alternative across all disciplines. This section summarizes the comparison of Alternative 3 with the Preferred Alternative.

IV.21.3.5.7.1 Alternative 3 Compared With Preferred Alternative for Plan-wide DRECP

Alternative 3 results in noise impacts over 150,000 acres with 129,000 acres impacted by solar projects and distributed generation, 5,000 acres impacted by wind projects, 17,000 acres impacted by geothermal projects, and additional acreage associated with transmission, which includes substations and gen-ties within the Plan Area.

In comparison to the Preferred Alternative, Alternative 3 would result in 11,000 more acres of solar and distributed generation, 4,000 fewer acres of wind generation, and the same acres of geothermal generation.

Alternative 3 would result in 6,000 more acres of impacts compared to the Preferred Alternative.

The types of noise and vibration levels caused by renewable energy development under Alternative 3 would result in similar impacts as those from the Preferred Alternative. Therefore, the mitigation measures would be the same between Alternative 3 and the Preferred Alternative.

IV.21.3.5.7.2 Alternative 3 Compared With Preferred Alternative for the BLM Land Use Plan Amendment

The noise-impacted areas under Alternative 3 are similar to those under the Preferred Alternative.

IV.21.3.5.7.3 Alternative 3 Compared With Preferred Alternative for NCCP

The impacts of the NCCP for Alternative 3 are the same as those defined in Section IV.21.3.2.1 for the Plan-wide analysis. As a result, the comparison of Alternative 3 with the Preferred Alternative for the NCCP is the same as described for the Plan-wide DRECP.

IV.21.3.5.7.4 Alternative 3 Compared With Preferred Alternative for the GCP

The impacts of the GCP under Alternative 3 and the Preferred Alternative would be similar to those defined in Section IV.21.3.2.1 for the Plan-wide analyses but would occur on nonfederal lands only.

IV.21.3.6 Alternative 4

IV.21.3.6.1 Plan-wide Impacts of Implementing the DRECP: Alternative 4

IV.21.3.6.1.1 Plan-wide Impacts and Mitigation Measures from Renewable Energy and Transmission Development

Under Alternative 4, renewable energy-related activities covered by the Plan are confined to DFAs, in which an estimated 147,000 acres would be available for long-term development (see Volume II, Table II.7-5b). This represents a similar amount of long-term disturbance as under the Preferred Alternative, but a fewer number of acres where this disturbance could occur.

Impact Assessment

Impact NV-1: Plan components would generate noise that would adversely affect sensitive receptors.

The Plan components associated with renewable energy technologies and transmission, would result in short-term noise impacts from construction activities and long-term noise impacts from operation of Plan components under Alternative 4. The area affected by the direct long-term noise impact would be 147,000 acres throughout the Plan Area.

Alternative 4 covers the same area as the No Action Alternative, which would affect the same sensitive receptor communities as described in Section IV.21.3.1.1.1. The areas with renewable energy development under Alternative 4 would generate short- and long-term noise impacts and would require mitigation as described for the Preferred Alternative in Section IV.21.3.2.1.1.

Impact NV-2: Plan components would generate ground-borne vibrations that adversely affect sensitive receptors.

All Plan components included in renewable energy technologies and transmission would result in construction-related vibration impacts. Some technologies would result in operation vibration impacts under Alternative 4. Typical vibration levels would have a low probability of being above the threshold of detectability and would not require mitigation as described under the Impact NV-2 discussion for the Preferred Alternative in Section IV.21.3.2.1.1.

Impact NV-3: Plan components would generate noise or ground-borne vibration levels in conflict with local standards.

Plan components included in renewable energy technologies and transmission would result in noise and vibration levels that could potentially conflict with local noise and vibration standards under Alternative 4. Therefore, development would require mitigation as described for the Preferred Alternative in Section IV.21.3.2.1.1.

Impacts in Study Area Lands

Future Assessment Areas. FAAs do not apply to Alternative 4.

Special Analysis Areas. Designating the SAAs as conservation would have no impact on this resource. Impacts would be the same as those explained for the Plan-wide reserve design in Section IV.21.2.2, Impacts of the Reserve Design.

DRECP Variance Lands. DRECP Variance Lands represent the BLM Solar PEIS Variance Lands as screened for the DRECP and EIR/EIS based on BLM screening criteria. Covered Activities could be permitted for NCCP purposes only through an NCCP plan amendment. However, development of renewable energy on Variance Lands would not require a BLM Land Use Plan Amendment so the environmental review process would be somewhat simpler than if the location were left undesignated. Development of the DRECP Variance Lands would impact noise and vibration as it would within DFAs.

Impact Reduction Strategies and Mitigation

The implementation of the Plan would result in conservation of some desert lands as well as the development of renewable energy generation and transmission facilities on other lands. The impacts of the renewable energy development covered by the Plan would be lessened in several ways. First, the Plan incorporates Conservation and Management Actions (CMAs) for each alternative, including specific biological reserve design components and LUPA components. Also, the implementation of existing laws, orders,

regulations, and standards would reduce the impacts of project development. If significant impacts would still result after implementation of CMAs and compliance with applicable laws and regulations, then mitigation measures are recommended similar to those of the Preferred Alternative.

Conservation and Management Actions

The conservation strategy for Alternative 4 (presented in Volume II, Section II.7.1.2) defines specific actions that would reduce the impacts of this alternative. The conservation strategy includes a definition of the reserve design and specific CMAs for the Preferred Alternative. While the CMAs were developed for BLM lands only, this analysis assumes that all CMAs would be applied also to nonfederal lands.

Laws and Regulations

Similar to the No Action Alternative, existing laws and regulations will reduce certain impacts of Plan implementation. Relevant regulations are presented in the Regulatory Setting in Volume III. The requirements of relevant laws and regulations are summarized for the No Action Alternative in Section IV.21.3.1.1.1.

Mitigation Measures

After implementation of the CMAs and existing laws and regulations, mitigation measures will be applied to further reduce some of the DRECP's adverse impacts. The types of impacts for Alternative 4 would be the same as with the Preferred Alternative, therefore the approach to mitigation would also be the same (see Section IV.21.3.2.1.1 for the complete list of mitigation measures).

IV.21.3.6.1.2 Impacts from Reserve Design

The reserve design would set aside conservation lands and prohibit renewable energy development in these areas. Because no development would occur on these lands, no noise impacts from these lands would affect sensitive receptors.

IV.21.3.6.2 Impacts of DRECP Land Use Plan Amendment on BLM Land: Alternative 4

This section addresses two components of effects of the BLM LUPA: the streamlined development of renewable energy and transmission on BLM land under the LUPA and the impacts of the amended land use plans themselves.

IV.21.3.6.2.1 Impacts from Renewable Energy and Transmission Development on BLM Land

Development of renewable energy and transmission projects on BLM land would have the same types of impacts as those described in the Plan-wide analysis (Section IV.21.3.6.1.1).

IV.21.3.6.2.2 Impacts of Changes to BLM Land Designations

The LUPA associated with Alternative 4 includes designation of new NLCS lands and ACECs, designation of new and expanded SRMAs, and definition of buffer corridors along National Scenic and Historic Trails. These changes would generally limit the extent of future development, and impacts would be avoided where possible, minimized, and/or mitigated to the extent practicable.

IV.21.3.6.3 Impacts of Natural Community Conservation Plan: Alternative 4

The impacts of the NCCP for Alternative 4 would be the same as those defined in Section IV.21.3.2.1 for the Plan-wide analysis.

The Plan-wide impacts discussed in the analysis in Section IV.21.3.2.1 serve as the impact analysis for the NCCP under Alternative 4.

IV.21.3.6.4 Impacts of General Conservation Plan: Alternative 4

The impacts of the GCP for Alternative 4 would be similar to those defined in Section IV.21.3.2.1 for the Plan-wide analysis, but they would occur on nonfederal lands only.

The Plan-wide impacts discussed in the analysis in Section IV.21.3.2.1 serve as the impact analysis for the GCP under Alternative 4.

IV.21.3.6.5 Impacts Outside the Plan Area

IV.21.3.6.5.1 Impacts of Transmission Outside the Plan Area

The noise and vibration impacts caused by development of transmission outside the Plan Area would be the same under all alternatives. These impacts are as described for the No Action Alternative in Section IV.21.3.1.5, Impacts Outside the Plan Area in No Action Alternative.

IV.21.3.6.5.2 Impacts of BLM LUPA Decisions Outside the Plan Area

Alternative 4 would result in changes to land designations under the CDCA Plan, both inside and outside the Plan Area. These changes would generally limit the extent of future

development and impacts would be avoided where possible, minimized, and/or mitigated to the extent practicable.

IV.21.3.6.6 CEQA Significance Determination for Alternative 4

NV-1: Plan components would generate noise that would adversely affect sensitive receptors. Development of renewable energy technologies and transmission would increase noise levels in the vicinity of each project under Alternative 4. The potential for a significant noise impact exists, although impacts depend on the particular site-specific background ambient noise levels and the distances that separate sensitive land uses from the renewable energy development. This analysis identifies mitigation to avoid noise levels that are excessive or substantially above ambient levels. As described in Section IV.21.3.2.1.1, Mitigation Measures NV-1a, NV-1b, and NV-1c would reduce this impact to less than significant.

NV-2: Plan components would generate ground-borne vibrations that adversely affect sensitive receptors. Renewable energy technologies and transmission would result in short-term construction-related and long-term operation-related ground-borne vibration impacts under Alternative 4. Because project-related vibration would not be generated above the threshold of detectability beyond renewable energy project site boundaries, Impact NV-2 would be less than significant.

NV-3: Plan components would generate noise or ground-borne vibration levels in conflict with local standards. Noise and vibrations generated by renewable energy technologies and transmission would potentially conflict with local noise and vibration standards under Alternative 4. Local standards usually allow limited noise from daytime construction activities, and the potential for operational and maintenance noise to create land use conflicts would only occur for particular sites unable to provide sufficient setbacks between the renewable energy project and sensitive areas. As described in Section IV.21.3.2.1.1, Mitigation Measures NV-1a, NV-1b, and NV-1c would reduce this impact to less than significant.

IV.21.3.6.7 Comparison of Alternative 4 With Preferred Alternative

Chapter IV.27 presents a comparison of all action alternatives and the No Action Alternative across all disciplines. This section summarizes the comparison of Alternative 4 with the Preferred Alternative.

IV.21.3.6.7.1 Alternative 4 Compared With Preferred Alternative for Plan-wide DRECP

Alternative 4 results in noise impacts to 147,000 acres with 123,000 acres impacted by solar projects and distributed generation, 7,000 acres impacted by wind projects, 17,000

acres impacted by geothermal projects, and additional acres impacted by noise associated transmission, which includes substations and gen-ties within the Plan Area.

In comparison to the Preferred Alternative, Alternative 4 would include greater levels of development of solar and distributed generation by 5,000 acres, with 2,000 fewer acres dedicated to wind generation and the same acres dedicated to geothermal generation.

In total, Alternative 4 would result in an increase of 3,000 acres impacted by noise compared to the Preferred Alternative.

Alternative 4 would result in more noise impacts in the Cadiz Valley and Chocolate Mountains, Mojave and Silurian Valley, Owens River Valley, Panamint Death Valley, and West Mojave and Eastern Slopes ecoregion subareas than the Preferred Alternative because greater development is proposed in these areas.

The types of noise and vibration levels caused by renewable energy development under Alternative 4 would result in similar impacts as described under the Preferred Alternative. Therefore, the mitigation measures would be the same between Alternative 4 and the Preferred Alternative.

IV.21.3.6.7.2 Alternative 4 Compared With Preferred Alternative for the BLM Land Use Plan Amendment

The noise-impacted areas under Alternative 4 are similar to those under the Preferred Alternative.

IV.21.3.6.7.3 Alternative 4 Compared With Preferred Alternative for NCCP

The impacts of the NCCP for Alternative 4 are the same as those defined in Section IV.21.3.2.1 for the Plan-wide analysis. As a result, the comparison of Alternative 4 with the Preferred Alternative for the NCCP is the same as described for the Plan-wide DRECP.

IV.21.3.6.7.4 Alternative 4 Compared With Preferred Alternative for the GCP

The impacts of the GCP under Alternative 4 and the Preferred Alternative would be similar to those defined in Section IV.21.3.2.1 for the Plan-wide analyses but would occur on nonfederal lands only.

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