IV.3 METEOROLOGY AND CLIMATE CHANGE

IV.3.1 Approach to Impact Analysis

IV.3.1.1 General Methods

This chapter analysis addresses the potential for the proposed Desert Renewable Energy Conservation Plan (DRECP or Plan) alternatives to increase or decrease cumulative levels of greenhouse gas (GHG) emissions after renewable energy facilities and their associated transmission facilities are built out to be on line by 2040. This analysis also addresses how the alternatives relate to the emissions reduction targets identified in the California Global Warming Solutions Act and in California's Climate Change Scoping Plan.

This impact analysis considers broad activities, not site-specific issues associated with particular projects. Project- or location-specific factors that vary considerably from site to site cannot feasibly be analyzed in a programmatic document on this scale. No single activity or source of GHG emissions is large enough to trigger global climate change on its own. Because climate change is the result of the individual contributions of countless past, present, and future sources, GHG impacts are inherently cumulative. The cumulative impact analyses for the alternatives include GHG impacts from construction, operations, and decommissioning activities, as well as GHG reductions from the operation of the planned renewable energy projects. Project-specific impacts will be assessed both during the permitting process and in supplemental National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) documents.

The metrics used to assess impact in this analysis are the following:

- The number of megawatt-hours (MWh) likely to be produced under each alternative built out by 2040.
- The loss of carbon uptake from vegetation removed as a result of ground disturbance under each alternative.

These metrics provide a basis for comparison for the benefits and impacts under each alternative. The MWh metric indicates the effectiveness of the Plan in producing electricity from renewable resources, while the ground disturbance metric indicates how Plan activities influence development of the resources.

Climate change adaptation strategies and vegetation restoration are in the scope of assessment of Chapter IV.7, Biological Resources. Appendix P illustrates the climate setting and how climate change science pertains to the DRECP landscape and the adaptive management framework.

IV.3.1.2 California Environmental Quality Act (CEQA) Standards of Significance

CEQA establishes the following questions for assessing a project's contribution to GHG emissions and global climate change:

- Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?
- Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

The threshold of significance is normally established by the CEQA lead agency as some level of a net increase in GHG emissions. The first bulleted question pertains to construction, operations and maintenance, and decommissioning phases under each alternative. These anticipated emissions are analyzed in relation to existing GHG levels and regulations.

With regard to the second bulleted question, the California Global Warming Solutions Act and the Climate Change Scoping Plan make up the basis for the most relevant applicable GHG reduction programs. These are described in Volume III, Chapter III.3, the Regulatory Setting. The California Global Warming Solutions Act established GHG emissions reduction targets for the state and required development of a plan that would outline the strategies to achieve these targets. Expanding the use of renewable energy in California is an important part of California's approach to GHG reduction.

The state Climate Change Scoping Plan includes several measures to reduce GHG emissions from the energy sector (electricity production), including mandates for utility providers to increase their renewable energy mix to 33% by 2020. This means that 33% of the electricity provided by a utility must be produced from renewable energy sources. The intent of this measure, called the Renewable Portfolio Standard (RPS), is to transition away from dependence on fossil fuels and out-of-state fossil-fuel fired energy sources.

IV.3.2 Typical Impacts Common to All Action Alternatives

Development of solar, distributed generation, wind, and geothermal renewable energy sources generates relatively low levels of GHG emissions from construction, operations, and decommissioning activities (see Appendix R1.3-1 for examples of GHG emission rates for existing projects in the Plan Area).

The GHG emissions from construction and operations activities result from fossil-fuel combustion in the engines of construction equipment, vehicles carrying construction materials and workers, and vehicles necessary to provide maintenance, site security, and other operating

functions. Carbon dioxide (CO_2) emissions account for the majority of GHG emissions from motor vehicles and equipment used during construction and operation and are directly related to the quantity of fuel combusted.

For complete development of a renewable energy site, typical levels of GHG emissions from construction, operation, and maintenance can be estimated based on the documented levels of emissions associated with existing renewable energy projects in the Plan Area (See Volume III, Section III.3.3.1, and Appendix R1.3-1). Environmental documents for the existing renewable energy projects in the Plan Area forecast levels of total GHG emission rates for project construction activities plus typical year-to-year operations activities. These project-specific GHG emissions occur at greater levels at sites where greater electrical generating capacity is installed. As described in Volume III, Section III.3.3.1, GHG emissions typically occur at a rate ranging from about 1 to 39 metric ton CO_2 equivalent ($MTCO_2E$) per year for each megawatt (MW) of generation capacity installed. Typically, the complete development of a site causes an average rate of less than 10 $MTCO_2E$ per year for each MW of capacity installed.

Along with the GHG emissions caused by project construction activities and operations activities such as maintenance and inspection, development of renewable energy affects the natural carbon uptake of vegetation lost through land use conversion. Other one-time (life-cycle) events such as manufacturing, transport, and ultimately disposal of project components also cause GHG emissions.

Indirect GHG emissions reductions would occur because of the electricity provided by each renewable energy project. As discussed here, because developing new renewable energy sources would reduce, displace, or eliminate the emissions that would otherwise occur from fossil fuel-fired power plants, the avoided GHG emissions typically greatly exceed the levels of emissions directly caused by development of the project.

IV.3.2.1 Impacts of Renewable Energy and Transmission Development

The GHG emissions impacts from solar, wind, geothermal, and transmission differ depending on the individual technology deployed. All of the renewable energy technologies would generate GHG emissions from activities necessary for site characterization and testing, employee commuting, construction, operations, and decommissioning. Development of the land also results in lost capacity of soil and vegetation to sequester carbon at the sites. However, this impact is offset by a reduction in emissions associated with producing electricity through the use of carbon-based fuels.

Electricity production by fossil fuel-fired California and western U.S. power plants under baseline conditions causes approximately 20% of California's overall GHG inventory.

Producing electricity through renewable energy technologies avoids conventional power plant emissions that occur when serving the California load. These substantial GHG emissions reductions would be indirect, because while each renewable energy project would enable a reduction, the renewable energy project is not in control of those reductions. To serve any given load, these GHG reductions are attributable to using the renewable resources.

IV.3.2.1.1 Impacts of Site Characterization

The typical GHG emissions impacts from site characterization activities—which include temporary access roads, site reconnaissance, geotechnical borings, and the construction of meteorological towers—would be similar for each renewable energy technology. The emissions from site characterization would come from fossil-fuel combustion in the engines of the equipment and vehicles used during construction or decommissioning. An in-depth list of activities is in Volume II, Sections II.3.1.3.1 to II.3.1.3.4.

IV.3.2.1.2 Impacts of Construction and Decommissioning

The typical GHG emissions impacts from construction and decommissioning activities result from fossil-fuel combustion in the engines of construction equipment and the vehicles carrying construction materials and workers to each development site. Diesel fuel or gasoline is used in mobilizing the heavy-duty construction equipment, site development and preparation, facility removal, building construction, and roadway construction; the nature of the GHG emissions from these types of activities would be similar regardless of the renewable energy technology. The GHG emissions from decommissioning are similar to those that occur during construction. Because CO_2 has an atmospheric lifetime of from 50 to 200 years, assessing the impacts of limited-duration construction-phase GHG emissions usually involves averaging or amortizing the total emissions created by the construction effort over each project's expected operating life. An in-depth list of activities is in Volume II, Sections II.3.1.3.1 to II.3.1.3.4.

Land use conversion brought about by the development of renewable energy and the vegetation removal that occurs with ground disturbance may reduce the rate of natural carbon uptake into soils and vegetation (carbon sequestration). Soils and plants on each development site currently provide a natural carbon sink. By developing the land, some but not all of the natural carbon sequestration provided by the existing soils and vegetation would be eliminated. Vegetation management and restoration practices during project operation can partially restore the natural removal of CO_2 from the atmosphere that would otherwise be lost through construction-related ground disturbance.

IV.3.2.1.3 Impacts of Operations and Maintenance

The GHG emissions occurring during operation and maintenance of each renewable energy project result from the fossil-fuel combustion used for routine upkeep of the project site, security, emergency generators, employee commuting trips, and vegetation removal. Sources of GHG emissions occur with access and spur road maintenance, combustion of natural gas for solar thermal technologies, facilities maintenance, geothermal well drilling, well venting, and steam turbine operations, among other activities. Sulfur hexafluoride (SF_6) is used as an insulating gas in electric power transmission and distribution equipment.

Solar thermal projects could additionally involve combustion of natural gas and therefore are expected to result in GHG emissions impacts during operations. Geothermal technologies would result in additional emissions of CO_2 and methane (CH_4) naturally present in geothermal steam emitted during well venting and steam turbine operations.

An in-depth list of operations and maintenance activities is presented in Volume II, Sections II.3.1.3.1 to II.3.1.3.4.

IV.3.2.2 Impacts of the Reserve Design

In general, the reserve design would define large areas where development would be very limited or prohibited. Construction activities would be limited, and new vehicle emissions would be at very low levels. In areas with no development, there would be no removal of vegetation, so the natural carbon uptake of existing plants would continue or be enhanced through restoration design that has optimization of carbon sequestration as one goal. Restoration of plants in the reserve design is discussed in Chapter IV.7, Biological Resources.

IV.3.2.3 Impacts of Bureau of Land Management (BLM) Land Use Plan Decisions

IV.3.2.3.1 Impacts of Renewable Energy Development and Transmission on BLM Lands

The typical impacts from the various renewable energy and transmission technologies on Bureau of Land Management (BLM) lands would be the same as those described in Section IV.3.2.1. However, the specific locations where 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.3.2.3.2 Impacts of BLM Land Designations and Management Actions

The BLM LUPA land designations define management approaches that protect ecological, historic, cultural, scenic, scientific, and recreation resources and values. They would not have an effect on GHG emissions, except for controls on emissions-generating projects**.**

Details on allowable uses and management within National Conservation Lands are presented in the proposed LUPA description in Volume II. Details on the goals, objectives, allowable uses, and management actions for each Area of Critical Environmental Concern (ACEC) and Special Recreation Management Area (SRMA) unit are presented in the LUPA worksheets in Appendix H.

IV.3.2.4 Impacts of Natural Community Conservation Plan and General Conservation Plan

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

IV.3.2.4.1 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.3.2 and for each alternative description that follows.

IV.3.2.4.2 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.3.2. However, the locations where these impacts would occur vary by alternative. Any differences in these impacts that result from the locational differences are described for each alternative.

IV.3.3 Impact Analysis by Alternative

The following sections present impact analysis on GHG emissions for the No Action Alternative, the Preferred Alternative, and Alternatives 1 through 4.

IV.3.3.1 No Action Alternative

IV.3.3.1.1 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 consistent with past and ongoing renewable energy and transmission projects.

The No Action Alternative assumes a mix of technologies producing 48.9 million MWh annually. The mix includes 14,700 MW of solar and distributed generation, 5,000 MW of wind, and 300 MW of geothermal, to achieve approximately 20,000 MW of generation capacity installed, built out, and on line by 2040.

IV.3.3.1.1.1 Impacts and Mitigation for Renewable Energy and Transmission Development in No Action Alternative

Impacts

Impact MC-1: Construction or operation of Plan components would generate GHG emissions.

All development of renewable energy technologies and transmission would result in GHG emissions from activities listed previously (in Section IV.3.2), including construction, operations and maintenance, and decommissioning. Emissions for the 2040 horizon appear here, although year-to-year rates would vary as renewable energy facilities and their associated transmission capacities are built out to be on line by 2040. Separate discussions appear for the GHG emissions caused by construction activities, and by operations activities such as maintenance and inspection, the effects of land use conversion, and indirect GHG emissions reductions from the energy output provided by the renewable energy technologies.

Emissions from Development Activities: Construction, Operations, and Decommissioning. Examples of the typical levels of GHG emissions produced by development of individual renewable energy projects are listed in Appendix R1.3-1, and these levels of emissions are indicative of those that would occur from development of projects expected under the No Action Alternative.

Projects developed under the No Action Alternative are anticipated to produce 48,900,000 MWh of electricity each year from facilities with a combined capacity of approximately 20,000 MW by the time they are built out by 2040. Based on the existing projects in the Plan Area, construction emissions plus operations emissions during the life

of each project would occur at an average rate of less than 10 $MTCO_2E$ per year for each MW of capacity (see Section III.3.3.1 and Appendix R1.3-1). Development activities to install approximately 20,000 MW through a variety of individual projects would therefore result in GHG emissions at the rate of approximately 200,000 $MTCO_2E$ per year.

Emissions Related to Land Use Conversion. There are 9,781,700 acres of land within the Plan Area that would be available for development under the No Action Alternative. As defined in Volume II, the No Action Alternative would result in 122,000 acres of long-term disturbance due to construction and operation of renewable generation facilities. Development of transmission would disturb additional areas. This ground disturbance is assumed to remove vegetation that naturally provides carbon uptake. Converting the existing lands would eliminate the natural sequestration of carbon because the existing vegetation acts as a sink by removing CO_2 from the atmosphere. As described under typical impacts, ground disturbance and vegetation removal during construction of renewable energy facilities would add to the GHG impact because vegetation would no longer be present to sequester CO_2. The loss of carbon uptake would depend on what fraction of the natural vegetation of each site would be cleared for permanent installation of foundations or other structures, and on efforts to minimize soil erosion or protect existing habitat to minimize the loss of carbon uptake.

Based on the loss of vegetation due to the ground disturbance that would occur in the No Action Alternative, there would be a reduced rate of carbon uptake. The actual amount of this loss is uncertain because it would depend on each particular development site, and data on rates of sequestration by vegetation and soils are approximations. This loss could range from 178,000 $MTCO_2E$ to 630,000 $MTCO_2E$ per year across the entire Plan Area (see Table IV.3-1).

Table IV.3-1
Estimated Loss of Annual Carbon Uptake – No Action Alternative

Ecoregion Subarea	Permanent Disturbance (acres)	Carbon Sequestered ($MTCO_2E$), Low Est.[1]	Carbon Sequestered ($MTCO_2E$), High Est.[2]
Cadiz Valley and Chocolate Mountains	43,500	-53,000	-187,300
Imperial Borrego Valley	28,900	-35,300	-124,700
Kingston and Funeral Mountains	16,500	-20,200	-71,200
Mojave and Silurian Valley	3,400	-4,100	-14,600
Owens River Valley	0	0	0
Panamint Death Valley	0	0	0
Pinto Lucerne Valley and Eastern Slopes	4,800	-5,800	-20,600
Piute Valley and Sacramento Mountains	0	0	0

Table IV.3-1
Estimated Loss of Annual Carbon Uptake – No Action Alternative

Ecoregion Subarea	Permanent Disturbance (acres)	Carbon Sequestered ($MTCO_2E$), Low Est.[1]	Carbon Sequestered ($MTCO_2E$), High Est.[2]
Providence and Bullion Mountains	12,800	-15,600	-55,300
West Mojave and Eastern Slopes	36,300	-44,300	-156,500
Total	**146,000**	**-178,000**	**-630,000**

[1] Estimate for "average U.S. forests," including desert scrub environments. Desert scrub sequesters less carbon than other U.S. forest categories. http://www.epa.gov/cleanenergy/energy-resources/refs.html#pineforests.

[2] Estimate for "grasslands," as reported by the California Climate Action Registry and the California Emissions Estimator Model, which is a category that includes shrub communities that fall below the threshold values used in the forest land category (http://www.caleemod.com, Appendix A).

Note: The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Emissions Avoided by Producing Electricity. The use of renewable power would displace power produced by carbon-based fuels that would otherwise be used to meet electricity demand. The power displaced is incremental power provided by generators, typically from natural gas power plants. The California Public Utilities Commission (CPUC) has stated that, by 2020, the marginal power plant will be a new combined-cycle combustion turbine 95% of the time or a new combustion turbine 5% of the time. Based on this ratio, the GHG emissions associated with marginal power production are 830 pounds CO_2E per MWh (Air Resources Board [ARB] 2010). The Environmental Protection Agency (EPA) estimates the baseline GHG emissions of marginal power to be more than 990 pounds CO_2E per MWh for California (see Table III.3-3).

Absent the emissions directly caused by construction, operations, and decommissioning, the GHG emissions that would be avoided or displaced as a result of new solar and wind renewable electricity production are expected to be approximately 830 pounds CO_2E per MWh (see Section III.3.3.2). GHG emissions displaced by geothermal energy would be approximately 520 pounds CO_2E per MWh, which accounts for the CO_2 that occurs naturally in geothermal steam released by operations at a geothermal plant, which averages 310 pounds CO_2E per MWh (ARB 2010). Methane may also be naturally present in the steam. As seen for the existing renewable energy projects in the Plan Area (see Volume III, Section III.3.3.1, and Appendix R1.3-1), the displaced annual GHG emissions exceed the total emissions calculated for construction, operations, and decommissioning, resulting in a GHG reduction.

These GHG emissions reductions for the No Action Alternative would be approximately 18,200,000 $MTCO_2E$ per year for the combined renewable energy technologies (See Table IV.3-2). Because the GHG avoided from fossil fuel-fired power plants would greatly exceed GHG emissions generated by renewable energy development and land use conversion, the electricity produced under the No Action Alternative would reduce California's net GHG emissions.

Table IV.3-2
Annual GHG Emissions Reductions – No Action Alternative

Technology	Annual Production (MWh)	Avoided Emissions ($MTCO_2E$)
Solar[1]	31,320,000	11,790,000
Wind[1]	15,920,000	5,990,000
Geothermal[2]	1,630,000	380,000
Total	**48,900,000**	**18,200,000**

[1] Emissions avoided/displaced for solar and wind energy are 830 pounds per MWh (ARB 2010).
[2] Emissions avoided/displaced for geothermal energy are 520 pounds per MWh (ARB 2010).

Impact MC-2: Construction or operation of Plan components would conflict with an applicable plan, policy, or regulation intended to address climate change.

Projects developed under the No Action Alternative would facilitate the GHG emissions reductions that California expects to achieve by generating electricity from renewable energy resources rather than from fossil fuel. This displacement of GHGs would lower the GHG baseline emissions attributable to electricity use in California and would be consistent with the GHG reduction goals established by Executive Orders, the California Global Warming Solutions Act, and the Climate Change Scoping Plan (see Volume III, Section III.3.1.2).

Executive Order S-14-08 established the RPS goal of 33% by 2020 and directed the Renewable Energy Action Team to achieve certain goals related to the DRECP, including processes to facilitate RPS desert project approval. Development of renewable energy facilities under the No Action Alternative would provide energy to retail sellers of electricity and partially enable California's utilities to comply with RPS requirements. However, the No Action Alternative would not include any long-term natural resource conservation strategies. The No Action Alternative would therefore conflict with Executive Order S-14-08, which addresses the need for renewable energy while conserving the natural resources of the desert. Aside from the conflict with Executive Order S-14-08, individual renewable energy projects under the No Action Alternative would not be expected to conflict with any other applicable plan, policy, or regulation adopted for purposes of reducing GHG emissions.

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. Because this Environmental Impact Report/Environmental Impact Statement (EIR/EIS) addresses amendments to BLM's land use plans, these plans are addressed separately and are not included in this section. The requirements of relevant regulations would reduce impacts through the following mechanisms:
- Executive Order S-3-05, signed by Governor Arnold Schwarzenegger on June 1, 2005, established GHG emissions reduction targets for the State of California and directed the California Environmental Protection Agency to oversee efforts to reach these targets.
- AB 32 (Nuñez), the California Global Warming Solutions Act of 2006, requires that the California Air Resources Board (CARB) adopt rules and regulations to reduce GHG emissions to 1990 levels by 2020. The CARB is required to publish a list of discrete GHG emissions reduction measures.
- The RPS promotes diversification of the state's electricity supply, and Executive Orders S-14-08 and S-21-09 established the goal that, by 2020, 33% of the electricity provided by a utility must be produced from renewable energy sources in a manner that considers conservation of California's desert natural resources.
- The Greenhouse Gases Emission Performance Standard (SB 1368) requires California utilities to satisfy a per-MWh performance threshold when making new investments in power plants. Baseload generation owned by, or under long-term contract to, California utilities must not exceed 1,100 pounds CO_2 per MWh (0.5 MT per MWh).
- CARB adopted SF_6 regulations (17 CCR 95350) to reduce SF_6 emissions from electric power system gas-insulated switchgear. The regulations require owners of such switchgear to (1) annually report their SF_6 emissions, (2) determine the emission rate relative to the SF_6 capacity of the switchgear, (3) provide a complete inventory of all gas-insulated switchgear and their SF_6 capacities, (4) produce a SF_6 gas container inventory, and (5) keep all information current for CARB enforcement staff inspection and verification. Transmission projects and switchgear associated with the renewable energy development projects would be subject to this regulation.

Mitigation

The types of mitigation available to reduce GHG focus on either avoiding or offsetting emissions from fossil fuels used during construction and controlling SF_6 emissions from elec-

trical switchgear. Following are the typical mitigation measures that would likely be implemented under the No Action Alternative. These strategies could be used, where necessary, to reduce GHG (as defined in Impact MC-1) under the No Action Alternative.

- Use electric vehicles, biodiesel, or alternative fuels during construction and operations phases to reduce the project's criteria and GHG pollutant emissions.
- Reduce SF_6 emissions and losses through a comprehensive strategy that includes the following actions: Develop and maintain a record of SF_6 purchases, an SF_6 leak detection and repair program using laser imaging leak detection and monitoring no less frequently than quarterly, an SF_6 recycling program, and an employee education and training program for avoiding or eliminating SF_6 emissions caused by gas-insulated switchgear.
- Offset construction-phase emissions by surrendering carbon credits backed by voluntary GHG emissions reductions to fully offset construction-phase GHG emissions.

IV.3.3.1.1.2 Impacts from Reserve Design in the No Action Alternative

The No Action Alternative has no reserve design, but without approval of an action alternative, there would be continued protection of existing Legislatively and Legally Protected Areas such as wilderness areas. In addition, under the No Action Alternative, renewable energy projects would continue to be evaluated and approved with project-specific mitigation requirements.

IV.3.3.1.2 Impacts on BLM Lands of Existing BLM Land Use Plans in No Action Alternative

Under the No Action Alternative, the existing land management plans within the Plan Area (California Desert Conservation Area [CDCA) Plan as amended, Caliente Resource Management Plan [RMP], and Bishop RMP) would continue to be implemented on BLM lands. As GHGs are not confined to specific boundaries, they would not interact any differently with ACECs and within Solar Energy Zones (SEZs) and Variance Lands.

IV.3.3.1.3 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. The appropriate lead agency would continue to consider projects individually. The impacts that would occur in the absence of the NCCP would be the same as those described in Section IV.3.3.1.1.1.

IV.3.3.1.4 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. The appropriate lead agency would continue to consider projects individually. The impacts that would occur in the absence of the GCP would be the same as those described in Section IV.3.3.1.1.1 but would be specific to nonfederal lands.

IV.3.3.1.5 Impacts Outside of Plan Area in No Action Alternative

IV.3.3.1.5.1 Impacts of Transmission Outside of Plan Area

New transmission lines would be required to deliver electricity from renewable energy projects in the Plan Area to high-demand urban areas. The corridors for transmission lines would be existing transmission corridors located outside the Plan Area in San Diego, Los Angeles, North Palm Springs–Riverside, and the Central Valley. Renewable energy projects produce electricity that avoids or displaces use of GHG-emitting power plants. These Outside of Plan Area transmission lines would be part of that overall GHG displacement or avoidance.

Impact MC-1: Construction or operation of Plan components would generate GHG emissions.

Except for emissions involved in the use of vehicles and equipment during the construction and maintenance of the transmission lines and emissions of SF_6 that escapes during its use as an insulating gas in switchgear, Outside of Plan Area transmission facilities would not create GHG emissions. The GHG emissions during routine operation and maintenance of the transmission lines would occur at much lower levels than during construction, and the GHG emissions avoided as a result of avoiding operation of fossil fuel-fired power plants would greatly exceed the levels of emissions from transmission line construction and operations activities.

Impact MC-2: Construction or operation of Plan components would conflict with an applicable plan, policy, or regulation intended to address climate change.

While GHG emissions would occur as a result of transmission line construction and operation, the overall effect of developing renewable energy resources and the transmission facilities to deliver the electricity to customers would reduce GHG emissions. The Outside of Plan Area transmission lines would be essential to achieving the RPS and the overall GHG reduction strategy for the state, as they would be needed to deliver renewable energy to load centers. Developing the transmission facilities would occur in a manner consistent

with and would not conflict with the California Global Warming Solutions Act, GHG reduction goals, and the Climate Change Scoping Plan (see Volume III, Section III.3.1.2).

IV.3.3.1.5.2 Impacts of Existing BLM Land Use Plans Outside of Plan Area

Under the No Action Alternative, the existing BLM CDCA land use plan would continue to be implemented; renewable energy projects would still be developed through BLM's existing policies. Impacts on GHG emissions would be of the types described in Section IV.3.2.1, with similar mitigation measures included on a case-by-case basis.

The existing land designations, such as existing protected areas, ACECs, and National Scenic and Historic Trails, would continue to be managed to protect their associated values and resources.

IV.3.3.1.6 CEQA Significance Determination: No Action Alternative

MC-1: Construction or operation of Plan components would generate GHG emissions. Development under the No Action Alternative would result in GHG emissions from construction, operations and maintenance, and decommissioning activities. Additionally, a loss of carbon uptake would occur due to the vegetation removal caused by ground disturbance. Indirect GHG emissions reductions would also occur because of the electricity provided by each renewable energy project. The level of GHG emissions avoided by producing electricity from renewable resources and displacing the use of fossil fuel-fired power plants would exceed the GHG emissions caused by renewable energy development activities and land use conversions. Because the electricity produced would reduce California's GHG emissions, Impact MC-1 would be less than significant, requiring no mitigation.

MC-2: Construction or operation of Plan components would conflict with an applicable plan, policy, or regulation intended to address climate change. The GHG emissions avoided as a result of projects producing electricity under the No Action Alternative would be consistent with the California Global Warming Solutions Act, GHG reduction goals, and the Climate Change Scoping Plan. While developing individual renewable energy projects would achieve GHG reduction goals, the No Action Alternative would not include any long-term natural resource conservation strategies. Executive Order S-14-08 established the goal of expediting the DRECP approval process by ensuring conservation of desert resources including biological, cultural, and other physical resources. The No Action Alternative could fall short of providing the conservation envisioned by Executive Order S-14-08. The adverse environmental effects to desert resources under the No Action Alternative are described in Volume IV. Failing to establish conservation strategies would cause a significant impact because of the potential conflict with Executive Order S-14-08. Because adopting one of the action alternatives would be a

feasible strategy for avoiding this potential conflict, Impact MC-2 under the No Action Alternative would be significant and unavoidable.

IV.3.3.2 Preferred Alternative

IV.3.3.2.1 Plan-wide Impacts of Implementing the DRECP: Preferred Alternative

The Preferred Alternative assumes that a mix of technologies will produce 54.5 million MWh of electricity annually. The mix includes 14,000 MW of solar and distributed generation, 3,000 MW of wind, and 3,000 MW of geothermal, to achieve approximately 20,000 MW of generation capacity installed, built out, and on line by 2040.

IV.3.3.2.1.1 Plan-wide Impacts and Mitigation Measures from Renewable Energy and Transmission Development

Impact Assessment

Impact MC-1: Construction or operation of Plan components would generate GHG emissions.

All of the Plan components from the renewable energy technologies and transmission would result in construction, operations and maintenance, and decommissioning activities that create GHG emissions, as described for the No Action Alternative in Section IV.3.3.1.1.1. Emissions for the 2040 horizon appear here, although the year-to-year rates would vary as the renewable energy facilities and associated transmission capacity are built out over the life of the Plan to be on line by 2040. Separate discussions appear for the GHG emissions caused by construction activities plus operations activities such as maintenance and inspection, the effects of land use conversion, and the indirect GHG emissions reductions that would occur because of the energy output provided by the renewable energy facilities.

Emissions from Development Activities: Construction, Operations, and Decommissioning. Projects developed under the Preferred Alternative are anticipated to produce 54,000,000 MWh of electricity per year from facilities having a combined capacity of approximately 20,000 MW when built out by 2040. Based on the emissions caused by existing projects, construction emissions plus operations, emissions to develop this capacity across the Plan Area would cause GHG emissions at a rate of approximately 200,000 $MTCO_2E$ per year during the life of the Plan.

Emissions Related to Land Use Conversion. There would be 144,000 acres of ground disturbance and vegetation removal due to renewable energy generation under the Preferred Alternative. Development of transmission would disturb additional areas. Vegetation

removal results in a loss of natural carbon uptake. Based on this loss of vegetation, the Preferred Alternative would reduce the rate of carbon uptake. The actual amount of this loss is uncertain because it would depend on each particular development site, and data on rates of sequestration by vegetation and soils are approximations. This loss could range from 198,000 $MTCO_2E$ to 699,000 $MTCO_2E$ per year (see Table IV.3-3).

Table IV.3-3
Estimated Loss of Annual Carbon Uptake – Preferred Alternative

Ecoregion Subarea	Permanent Disturbance (acres)	Carbon Sequestered ($MTCO_2E$), Low Est.[1]	Carbon Sequestered ($MTCO_2E$), High Est.[2]
Cadiz Valley and Chocolate Mountains	32,500	-39,700	-140,200
Imperial Borrego Valley	56,000	-68,300	-241,200
Kingston and Funeral Mountains	3,100	-3,700	-13,200
Mojave and Silurian Valley	6,500	-7,900	-27,900
Owens River Valley	1,100	-1,300	-4,700
Panamint Death Valley	0	0	0
Pinto Lucerne Valley and Eastern Slopes	13,100	-15,900	-56,300
Piute Valley and Sacramento Mountains	0	0	0
Providence and Bullion Mountains	1,300	-1,600	-5,500
West Mojave and Eastern Slopes	48,700	-59,400	-209,900
Total	**162,000**	**-198,000**	**-699,000**

[1] Estimate for "average U.S. forests," including desert scrub environments. Desert scrub sequesters less carbon than other U.S. forest categories. http://www.epa.gov/cleanenergy/energy-resources/refs.html#pineforests.

[2] Estimate for "grasslands," as reported by the California Climate Action Registry and the California Emissions Estimator Model, which is a category that includes shrub communities that fall below the threshold values used in the forest land category (http://www.caleemod.com, Appendix A).

Note: The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Emissions Avoided by Producing Electricity. The GHG emissions reductions for the Preferred Alternative would occur at the same displacement rates as described for the No Action Alternative in Section IV.3.3.1.1.1. The GHG emissions reductions for the Preferred Alternative would be approximately 18,500,000 $MTCO_2E$ per year for the combined renewable energy technologies (see Table IV.3-4). Because the GHG avoided from fossil fuel-fired power plants would greatly exceed the GHG emissions caused by renewable energy development activities and land use conversion, the electricity produced under the Preferred Alternative would reduce California's GHG emissions.

Table IV.3-4
Annual GHG Emissions Reductions – Preferred Alternative

Technology	Annual Production (MWh)	Avoided Emissions ($MTCO_2E$)
Solar[1]	31,070,000	11,700,000
Wind[1]	8,980,000	3,380,000
Geothermal[2]	14,450,000	3,410,000
Total	**54,500,000**	**18,500,000**

[1] Emissions avoided/displaced for solar and wind energy are 830 pounds per MWh (ARB 2010).
[2] Emissions avoided/displaced for geothermal energy are 520 pounds per MWh (ARB 2010).

Impact MC-2: Construction or operation of Plan components would conflict with an applicable plan, policy, or regulation intended to address climate change.

Projects developed under the Preferred Alternative would facilitate the GHG emissions reductions that California expects to achieve by generating electricity from renewable energy resources instead of fossil-fuel resources. This displacement of GHGs would be consistent with the California Global Warming Solutions Act, GHG reduction goals, and the Climate Change Scoping Plan (see Volume III, Section III.3.1.2). Additionally, the Preferred Alternative would address the need for renewable energy while establishing strategies for conservation of California's desert natural resources in a manner consistent with Executive Order S-14-08. Individual renewable energy projects would cause no other potential conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

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 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 shown in Table IV.1-2 and Figure II.3-1 in Volume II. 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 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 FAAs would impact climate change as it would within DFAs.

Special Analysis Areas. There are two areas defined as SAAs, which are areas subject to ongoing analysis. These areas (located in the Silurian Valley and just west of U.S. Route 395 [U.S. 395] in Kern County) have high value for renewable energy development and for 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/Conservation Designation.

DRECP Variance Lands. DRECP Variance Lands represent the BLM Solar PEIS Variance Lands screened for the DRECP and 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 LUPA, so the environmental review process would be somewhat simpler than if the location were left undesignated. Development of the DRECP Variance Lands would impact climate change 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. There are several ways in which the impacts of the renewable energy development covered by the Plan would be lessened. 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 at the project level 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.3.1.1) defines specific actions that would reduce the impacts of this alternative. The conservation strategy includes definition of the reserve design and specific CMAs for the Preferred Alternative. None of the CMAs, including CMAs for air resources, specifically address or achieve reductions in GHG emissions.

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.3.3.1.1.1.

Mitigation Measures

Mitigation for GHG emissions is not required under the Preferred Alternative because the electricity produced by renewable energy projects would reduce California's overall GHG emissions from the electricity sector. The DRECP under the Preferred Alternative would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

IV.3.3.2.1.2 Impacts of the Reserve Design

The Preferred Alternative would provide more than 8 million additional acres within the Plan Area with protective land designations. Establishing lands with protective designations provides GHG benefits because limiting development on the lands restricts the potential removal of vegetation, which would allow the natural carbon uptake of existing soils and vegetation to continue in these areas. Restoration of plants in the reserve design is discussed in Chapter IV.7, Biological Resources.

IV.3.3.2.2 Impacts of DRECP LUPA 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.3.3.2.2.1 Impacts from Renewable Energy and Transmission Development on BLM Land

Streamlining renewable energy development on BLM lands within the DFAs would not change the numeric calculations for Impacts MC-1 and MC-2. The range of loss of natural carbon uptake would remain the same, as well as the MWh produced under the Preferred Alternative and the GHG emissions reductions.

Streamlining development may result in the faster delivery of electricity to the grid, thereby achieving the GHG emissions reductions more quickly and maintaining consistency with the California Global Warming Solutions Act and the Climate Change Scoping Plan.

IV.3.3.2.2.2 Impacts of Changes to BLM Land Designations

The BLM LUPA land designations protect ecological, historical, cultural, scenic, scientific, and recreational resources and values. While other land uses within these areas are allowed, they must be compatible with the resources and values that the land designation is intended to protect. GHG impacts are not likely from changes to BLM Land Designations.

IV.3.3.2.3 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 CMAs under the NCCP is therefore equivalent to the Plan-wide analysis of the interagency alternatives, as described in Section IV.3.3.2.1.

IV.3.3.2.4 Impacts of General Conservation Plan

The impacts of the GCP for the Preferred Alternative would be similar to those defined in Section IV.3.3.2.1 for the Plan-wide analysis, but they would occur on nonfederal lands only.

IV.3.3.2.5 Impacts Outside of Plan Area

IV.3.3.2.5.1 Impacts of Transmission Outside of Plan Area

The impacts of Outside of Plan Area transmission on meteorology and climate change would be the same under all alternatives. These impacts are as described for the No Action Alternative in Section IV.3.3.1.5.1.

IV.3.3.2.5.2 Impacts of BLM LUPA Decisions Outside of Plan Area

The only changes outside the Plan Area would be the designation of National Landscape Conservation System (NLCS) lands, Areas of Critical Environmental Concern (ACECs), and National Scenic and Historic Trails management corridors, and Visual Resource Management (VRM) classes and new land allocations to replace multiple-use classes (MUCs) on CDCA lands. BLM land designations and management actions would not materially affect GHG emissions.

IV.3.3.2.6 CEQA Significance Determination for the Preferred Alternative

MC-1: Construction or operation of Plan components would generate GHG emissions. All of the Preferred Alternative Plan components from the renewable energy technologies and transmission would result in GHG emissions from construction, operations and maintenance, and decommissioning activities. Additionally, a loss of carbon uptake would occur due to the vegetation removal caused by ground disturbance. Indirect GHG emissions reductions would also occur because of the electricity provided by each renewable energy project. The level of GHG emissions avoided by producing electricity from renewable resources and displacing the use of fossil fuel-fired power plants would exceed the GHG emissions caused by renewable energy development activities and land use conversion. Because the electricity produced would reduce California's GHG emissions, Impact MC-1 would be less than significant, requiring no mitigation.

MC-2: Construction or operation of Plan components would conflict with an applicable plan, policy, or regulation intended to address climate change. The GHG emissions avoided as a result of projects producing electricity under the Preferred Alternative would be consistent with and would not conflict with the California Global Warming Solutions Act, GHG reduction goals, and the Climate Change Scoping Plan. Developing individual renewable energy projects under the Preferred Alternative would achieve the GHG reduction goals while conserving the natural resources of the desert, which would satisfy Executive Order S-14-08 in addressing the need for renewable energy. Individual projects that adhere to the conservation strategies of the DRECP are eligible for the Renewables Portfolio Standard (RPS), and comply with California Air Resources Board (CARB) rules and regulations to reduce GHG emissions would cause no other potential conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions, Impact MC-2 would be less than significant, requiring no mitigation.

IV.3.3.2.7 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.3.3.2.7.1 Preferred Alternative Compared With No Action Alternative for Plan-wide DRECP

The Preferred Alternative would produce greater levels of electricity compared with the No Action Alternative as a result of the mix of renewable energy resources. However, this would occur with a greater loss of natural carbon uptake because the Preferred Alternative would disturb an additional 22,000 acres. Implementing the DRECP under the Preferred Alternative would develop the resources in a manner that would satisfy Executive Order S-

14-08 to address the need for renewable energy. The Preferred Alternative would therefore avoid the potential conflict with Executive Order S-14-08 that would occur with the No Action Alternative.

The mix of technologies in the Preferred Alternative would provide 242,000 fewer MWh of solar and distributed generation, 6,938,000 fewer MWh of wind generation, and 12,814,000 more MWh of geothermal generation than the No Action Alternative (see Tables IV.3-2 and IV.3-4). When the avoided or displaced GHG emissions are calculated (see Section IV.3.3.1.1.1 for the rationale), the generation mix of the Preferred Alternative would provide 319,000 more $MTCO_2E$ GHG emissions reductions per year. This means a greater level of GHG emissions would be reduced (i.e., displaced) under the Preferred Alternative than under the No Action Alternative.

Unlike the No Action Alternative, the Preferred Alternative would cause no potential conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

IV.3.3.2.7.2 Preferred Alternative Compared With No Action Alternative for the BLM LUPA

The BLM land designations and management actions would not change the calculations for Impacts MC-1 and MC-2 analyzed under the No Action Alternative and the Preferred Alternative. The range of loss of natural carbon uptake would remain the same, as well as the MWh produced under both alternatives and the GHG emissions reduced.

The streamlined development under the Preferred Alternative may result in the faster delivery of electricity to the grid than under the No Action Alternative, thereby achieving the GHG emissions reductions more quickly and maintaining consistency with the California Global Warming Solutions Act and the Climate Change Scoping Plan.

IV.3.3.2.7.3 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.3.3.2.1 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.3.3.2.7.4 Preferred Alternative Compared With No Action Alternative for the GCP

The impacts under the No Action Alternative and the Preferred Alternative for the GCP would be similar to the Plan-wide analysis, and there are no expected changes.

IV.3.3.3 Alternative 1

IV.3.3.3.1 Plan-wide Impacts of Implementing the DRECP: Alternative 1

Alternative 1 assumes a mix of technologies producing 52.4 million MWh annually. The mix includes 17,000 MW of solar and distributed generation, 400 MW of wind, and 3,000 MW of geothermal, to achieve approximately 20,000 MW of generation capacity installed, built out, and on line by 2040.

IV.3.3.3.1.1 Plan-wide Impacts and Mitigation Measures from Renewable Energy and Transmission Development

Impact Assessment

Impact MC-1: Construction or operation of Plan components would generate GHG emissions.

All of the Plan components from renewable energy and transmission facilities would result in construction, operations and maintenance, and decommissioning activities, in turn resulting in GHG emissions, as described for the No Action Alternative in Section IV.3.3.1.1.1. Emissions for the 2040 horizon appear here, although the year-to-year rates would vary as renewable energy and transmission facilities are built out over the life of the Plan to be on line by 2040. Separate discussions appear for the GHG emissions caused by construction activities plus operations activities, such as maintenance and inspection; the effects of land use conversion; and the indirect GHG emissions reductions that would occur because of the energy output provided by the renewable energy technologies.

Emissions from Development Activities: Construction, Operations, and Decommissioning. Projects developed under Alternative 1 are anticipated to produce 52,428,000 MWh of electricity per year from facilities with a combined capacity of approximately 20,000 MW when built out by 2040. Construction emissions plus operations emissions to develop this capacity across the Plan Area would cause GHG emissions at a rate of approximately 200,000 $MTCO_2E$ per year during the life of the Plan.

Emissions Related to Land Use Conversion. There would be 148,000 acres of ground disturbance and vegetation removal due to renewable energy development under Alternative 1 (4,000 more acres than the Preferred Alternative). Development of transmission would also disturb additional areas. Vegetation removal results in a loss of natural carbon uptake, although the actual amount of this loss is uncertain because it would depend on each particular development site, and data on rates of sequestration by vegetation and soils are approximations. Based on this loss of vegetation, Alternative 1 would reduce the rate of carbon uptake between 204,000 $MTCO_2E$ to 721,000 $MTCO_2E$ per year (see Table IV.3-5).

Table IV.3-5
Estimated Loss of Annual Carbon Uptake – Alternative 1

Ecoregion Subareas	Permanent Disturbance (acres)	Carbon Sequestered ($MTCO_2E$), Low Est.[1]	Carbon Sequestered ($MTCO_2E$), High Est.[2]
Cadiz Valley and Chocolate Mountains	25,100	-30,600	-108,100
Imperial Borrego Valley	63,600	-77,600	-274,300
Kingston and Funeral Mountains	400	-500	-1,600
Mojave and Silurian Valley	8,100	-9,900	-35,100
Owens River Valley	6,100	-7,400	-26,100
Panamint Death Valley	0	0	0
Pinto Lucerne Valley and Eastern Slopes	16,700	-20,300	-71,800
Piute Valley and Sacramento Mountains	0	0	0
Providence and Bullion Mountains	2,200	-2,700	-9,400
West Mojave and Eastern Slopes	45,300	-55,200	-195,000
Total	**168,000**	**-204,000**	**-721,000**

[1] Estimate for "average U.S. forests," including desert scrub environments. Desert scrub sequesters less carbon than other U.S. forest categories. http://www.epa.gov/cleanenergy/energy-resources/refs.html#pineforests.

[2] Estimate for "grasslands," as reported by the California Climate Action Registry and the California Emissions Estimator Model, which is a category that includes shrub communities that fall below the threshold values used in the forest land category (http://www.caleemod.com, Appendix A).

Note: The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Emissions Avoided by Producing Electricity. The GHG emissions reductions for Alternative 1 would occur at the same displacement rates described for the No Action Alternative in Section IV.3.3.1.1.1. These GHG emissions reductions for Alternative 1 would be approximately 17,700,000 $MTCO_2E$ per year for the combined renewable energy technologies (see Table IV.3-6). Because the GHG avoided from fossil fuel-fired power plants would greatly exceed the GHG emissions caused by renewable energy development activities and land use conversion, the electricity produced under Alternative 1 would reduce California's GHG emissions.

Table IV.3-6
Annual GHG Emissions Reductions – Alternative 1

Technology	Annual Production (MWh)	Avoided Emissions ($MTCO_2E$)
Solar[1]	36,820,000	13,860,000
Wind[1]	1,160,000	440,000

Table IV.3-6
Annual GHG Emissions Reductions – Alternative 1

Technology	Annual Production (MWh)	Avoided Emissions ($MTCO_2E$)
Geothermal[2]	14,450,000	3,410,000
Total	**52,400,000**	**17,700,000**

[1] Emissions avoided/displaced for solar and wind energy are 830 pounds per MWh (ARB 2010).
[2] Emissions avoided/displaced for geothermal energy are 520 pounds per MWh (ARB 2010).

Impact MC-2: Construction or operation of Plan components would conflict with an applicable plan, policy, or regulation intended to address climate change.

Projects developed under Alternative 1 would facilitate the GHG emissions reductions that California expects to achieve by generating electricity from renewable energy resources instead of from fossil-fuel resources. This displacement of GHGs would be consistent with the California Global Warming Solutions Act, GHG reduction goals, and the Climate Change Scoping Plan (see Volume III, Section III.3.1.2). Individual renewable energy projects would cause no potential conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

Impacts in Study Area Lands

Future Assessment Areas. 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. 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.

DRECP Variance Lands. DRECP Variance Lands represent the BLM Solar PEIS Variance Lands screened for the DRECP and 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 climate change 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. There are several ways in which the impacts of the renewable energy development covered by the Plan would be lessened. First, the Plan incorporates 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 at the project level after implementation of CMAs and compliance with applicable laws and regulations, then specific mitigation measures are recommended in this section.

CMAs

The conservation strategy for Alternative 1 (presented in Volume II, Section II.3.1.1) defines specific actions that would reduce the impacts of this alternative. The conservation strategy includes 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. None of the CMAs, including CMAs for air resources, specifically address or achieve reductions in GHG emissions.

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.3.3.1.1.1.

Mitigation Measures

Mitigation for GHG emissions is not required under Alternative 1 because the electricity produced by renewable energy projects would reduce California's overall GHG emissions from the electricity sector. The DRECP under Alternative 1 would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

IV.3.3.3.1.2 Impacts from Reserve Design

Alternative 1 would provide more than 8 million additional acres within the Plan Area with protective land designations. Establishing lands with protective designations provides GHG benefits because limiting development on the lands restricts the potential removal of vegetation, which would allow the natural carbon uptake of existing soils and vegetation to continue in these areas.

IV.3.3.3.2 Impacts of DRECP LUPA 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.3.3.3.2.1 Impacts from Renewable Energy and Transmission Development on BLM Land

Streamlining renewable energy development on BLM lands within the DFAs would not change the numeric calculations for Impacts MC-1 and MC-2. The range of loss of natural carbon uptake would remain the same, as well as the MWh produced under Alternative 1 and the GHG emissions reductions.

Streamlining development may result in the faster delivery of electricity to the grid, thereby achieving the GHG emissions reductions more quickly and maintaining consistency with the California Global Warming Solutions Act and the Climate Change Scoping Plan.

IV.3.3.3.2.2 Impacts of Changes to BLM Land Designations

The BLM LUPA land designations protect ecological, historical, cultural, scenic, scientific, and recreational resources and values. While other land uses within these areas are allowed, they must be compatible with the resources and values that the land designation is intended to protect. Establishing lands with protective designations provides GHG benefits.

IV.3.3.3.3 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.3.3.2.1 for the Plan-wide analysis.

IV.3.3.3.4 Impacts of General Conservation Plan

The impacts of the GCP for Alternative 1 would be similar to those defined in Section IV.3.3.2.1 for the Plan-wide analysis, but they would occur on nonfederal lands only.

IV.3.3.3.5 Impacts Outside of Plan Area

IV.3.3.3.5.1 Impacts of Transmission Outside of Plan Area

The impacts of transmission outside the Plan Area on meteorology and climate change would be the same under all alternatives. These impacts are as described for the No Action Alternative in Section IV.3.3.1.5.1.

IV.3.3.3.5.2 Impacts of BLM LUPA Decisions Outside of Plan Area

The only changes outside the Plan Area would be the designation of NLCS lands, ACECs, and National Scenic and Historic Trails management corridors, and VRM classes and new land allocations to replace MUCs on CDCA lands. BLM land designations and management actions would not materially affect GHG emissions.

IV.3.3.3.6 CEQA Significance Determination for Alternative 1

MC-1: Construction or operation of Plan components would generate GHG emissions. All of the Alternative 1 Plan components from the renewable energy technologies and transmission would result in construction, operations and maintenance, and decommissioning activities and a loss of carbon uptake due to vegetation removal. Because the level of GHG emissions avoided by producing electricity from renewable resources would exceed the GHG emissions caused by development activities and land use conversion, Impact MC-1 would be less than significant, requiring no mitigation.

MC-2: Construction or operation of Plan components would conflict with an applicable plan, policy, or regulation intended to address climate change. The GHG emissions avoided as a result of projects producing electricity under Alternative 1 would be consistent with and would not conflict with the California Global Warming Solutions Act, GHG reduction goals, and the Climate Change Scoping Plan. Individual projects would cause no other potential conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Impact MC-2 would therefore be less than significant, requiring no mitigation.

IV.3.3.3.7 Comparison of Alternative 1 With the 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.3.3.3.7.1 Alternative 1 Compared With Preferred Alternative for Plan-wide DRECP

Alternative 1 would produce lower levels of electricity compared with the Preferred Alternative as a result of the mix of renewable energy resources. This would occur with a greater loss of natural carbon uptake because Alternative 1 would disturb an additional 5,240 acres compared with the Preferred Alternative.

The mix of technologies in Alternative 1 would provide 5,747,000 more MWh of solar and distributed generation, 7,821,000 less MWh wind generation, and the same amount of geothermal generation as under the Preferred Alternative (see Tables IV.3-4 and IV.3-6). When

the avoided or displaced GHG emissions are calculated (see Section IV.3.3.1.1.1 for the rationale), the generation mix of Alternative 1 would displace 781,000 fewer $MTCO_2E$ GHG emissions per year, which means a lower level of GHG emissions would be reduced (i.e., displaced) under Alternative 1 than under the Preferred Alternative.

IV.3.3.3.7.2 Alternative 1 Compared With Preferred Alternative for the BLM LUPA

The BLM land designations and management actions would not change the calculations for Impacts MC-1 and MC-2 as analyzed under Alternative 1 and the Preferred Alternative. The range of loss of natural carbon uptake would remain the same, as well as the MWh produced under both alternatives and the GHG emissions reduced. The streamlined development is anticipated to occur under both of the alternatives.

IV.3.3.3.7.3 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.3.3.2.1 for the Plan-wide analysis. As a result, the comparison of Alternative 1 with the No Action Alternative for the NCCP is the same as described for the Plan-wide DRECP.

IV.3.3.3.7.4 Alternative 1 Compared With Preferred Alternative for the GCP

The impacts under Alternative 1 and the Preferred Alternative for the GCP would be similar to the Plan-wide analysis, and there are no expected changes.

IV.3.3.4 Alternative 2

IV.3.3.4.1 Plan-wide Impacts of Implementing the DRECP: Alternative 2

Alternative 2 assumes a mix of technologies producing 56.6 million MWh annually. The mix includes 11,000 MW of solar and distributed generation, 6,000 MW of wind, and 3,000 MW of geothermal generation, to achieve approximately 20,000 MW of generation capacity installed, built out, and on line by 2040.

IV.3.3.4.1.1 Plan-wide Impacts and Mitigation Measures from Renewable Energy and Transmission Development

Impact Assessment

Impact MC-1: Construction or operation of Plan components would generate GHG emissions.

All of the Plan components from the renewable energy technologies and transmission would result in construction, operations and maintenance, and decommissioning would also result in GHG emissions as described for the No Action Alternative in Section IV.3.3.1.1.1. Emissions for the 2040 horizon appear here, although the year-to-year rates would vary as the renew-

able energy facilities and associated transmission capacity are built out over the life of the Plan to be on line by 2040. Separate discussions appear for the GHG emissions caused by construction activities plus operations activities such as maintenance and inspection, the effects of land use conversion, and the indirect GHG emissions reductions that would occur because of the energy output provided by the renewable energy facilities.

Emissions from Development Activities: Construction, Operations, and Decommissioning. Projects developed under Alternative 2 are anticipated to produce 56,628,000 MWh of electricity per year from facilities with a combined capacity of approximately 20,000 MW when built out by 2040. Construction emissions plus operations emissions to develop this capacity across the Plan Area would cause GHG emissions at a rate of approximately 200,000 $MTCO_2E$ per year during the life of the Plan.

Emissions Related to Land Use Conversion. There would be 135,000 acres of ground disturbance and vegetation removal due to renewable energy development under Alternative 2 (9,000 fewer acres than under the Preferred Alternative). Development of transmission would disturb additional areas. Vegetation removal results in a loss of natural carbon uptake, although the actual amount of this loss is uncertain because it would depend on each particular development site, and data on rates of sequestration by vegetation and soils are approximations. Based on this loss of vegetation, Alternative 2 would reduce the rate of carbon uptake between 190,000 $MTCO_2E$ to 672,000 $MTCO_2E$ per year (see Table IV.3-7).

Table IV.3-7
Estimated Loss of Annual Carbon Uptake – Alternative 2

Ecoregion	Permanent Disturbance (acres)	Carbon Sequestered ($MTCO_2E$), Low Est.[1]	Carbon Sequestered ($MTCO_2E$), High Est.[2]
Cadiz Valley and Chocolate Mountains	21,900	-26,700	-94,500
Imperial Borrego Valley	48,800	-59,500	-210,100
Kingston and Funeral Mountains	2,000	-2,400	-8,600
Mojave and Silurian Valley	7,400	-9,000	-31,800
Owens River Valley	1,800	-2,200	-7,900
Panamint Death Valley	900	—	—
Pinto Lucerne Valley and Eastern Slopes	14,700	-17,900	-63,200
Piute Valley and Sacramento Mountains	0	—	—
Providence and Bullion Mountains	2,200	-2,700	-9,600
West Mojave and Eastern Slopes	57,200	-69,700	-246,300
Total	**157,000**	**-190,000**	**-672,000**

[1] Estimate for "average U.S. forests," including desert scrub environments. Desert scrub sequesters less carbon than other U.S. forest categories. http://www.epa.gov/cleanenergy/energy-resources/refs.html#pineforests.

[2] Estimate for "grasslands," as reported by the California Climate Action Registry and the California Emissions Estimator Model, which is a category that includes shrub communities that fall below the threshold values used in the forest land category (http://www.caleemod.com, Appendix A).

Note: The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

Emissions Avoided by Producing Electricity. The GHG emissions reductions for Alternative 2 would occur at the same displacement rates described for the No Action Alternative in Section IV.3.3.1.1.1. The GHG emissions reductions for Alternative 2 would be approximately 19,300,000 $MTCO_2E$ per year for the combined renewable energy facilities (see Table IV.3-8). Because the GHG avoided from fossil fuel-fired power plants would greatly exceed the GHG emissions caused by renewable energy development activities and land use conversion, the electricity produced under Alternative 2 would reduce California's GHG emissions.

Table IV.3-8
Annual GHG Emissions Reductions – Alternative 2

Technology	Annual Production (MWh)	Avoided Emissions ($MTCO_2E$)
Solar[1]	25,180,000	9,480,000
Wind[1]	17,000,000	6,400,000
Geothermal[2]	14,450,000	3,410,000
Total	**56,600,000**	**19,300,000**

[1] Emissions avoided/displaced for solar and wind energy are 830 pounds per MWh (ARB 2010).
[2] Emissions avoided/displaced for geothermal energy are 520 pounds per MWh (ARB 2010).

Impact MC-2: Construction or operation of Plan components would conflict with an applicable plan, policy, or regulation intended to address climate change.

Projects developed under Alternative 2 would facilitate the GHG emissions reductions that California expects to achieve by generating electricity from renewable energy resources instead of fossil-fuel resources. This displacement of GHGs would be consistent with the California Global Warming Solutions Act, GHG reduction goals, and the Climate Change Scoping Plan (see Volume III, Section III.3.1.2). Individual renewable energy projects would cause no potential conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

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 LUPA would not be required. FAAs for each alternative are shown in Table IV.1-2 and Figure II.5-1 for Alternative 2 in Volume II. 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 climate change 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 screened for the DRECP and 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 climate change 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. There are several ways in which the impacts of the renewable energy development covered by the Plan would be lessened. First, the Plan incorporates 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 at the project level after implementation of CMAs and compliance with applicable laws and regulations, then specific mitigation measures are recommended in this section.

CMAs

The conservation strategy for Alternative 2 (presented in Volume II, Section II.3.1.1) defines specific actions that would reduce the impacts of this alternative. The conservation strategy includes 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. None of the CMAs, including CMAs for air resources, specifically address or achieve reductions in GHG emissions.

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.3.3.1.1.1.

Mitigation Measures

Mitigation for GHG emissions is not required under Alternative 2 because the electricity produced by renewable energy projects would reduce California's overall GHG emissions from the electricity sector. The DRECP under Alternative 2 would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

IV.3.3.4.1.2 Impacts from Reserve Design

Alternative 2 would provide more than 8 million additional acres within the Plan Area with protective land designations. Establishing lands with protective designations provides GHG benefits because limiting development on the lands restricts the potential removal of vegetation, which would allow the natural carbon uptake of existing soils and vegetation to continue in these areas.

IV.3.3.4.2 Impacts of DRECP LUPA 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.3.3.4.2.1 Impacts from Renewable Energy and Transmission Development on BLM Land

Streamlining renewable energy development on BLM lands within the DFAs would not change the numeric calculations for Impacts MC-1 and MC-2. The range of loss of natural carbon uptake would remain the same, as well as the MWh produced under Alternative 2 and the GHG emissions reductions.

Streamlining development may result in the faster delivery of electricity to the grid, thereby achieving the GHG emissions reductions more quickly and maintaining consistency with the California Global Warming Solutions Act and the Climate Change Scoping Plan.

IV.3.3.4.2.2 Impacts of Changes to BLM Land Designations

The BLM LUPA land designations protect ecological, historical, cultural, scenic, scientific, and recreational resources and values. While other land uses within these areas are allowed, they must be compatible with the resources and values that the land designation is intended to protect. Establishing lands with protective designations provides GHG benefits.

IV.3.3.4.3 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.3.3.2.1 for the Plan-wide analysis.

IV.3.3.4.4 Impacts of General Conservation Plan: Alternative 2

The impacts of the GCP for Alternative 2 would be similar to those defined in Section IV.3.3.2.1 for the Plan-wide analysis, but they would occur on nonfederal lands only.

IV.3.3.4.5 Impacts Outside of Plan Area

IV.3.3.4.5.1 Impacts of Transmission Outside of Plan Area

The impacts of Outside of Plan Area transmission on meteorology and climate change would be the same under all alternatives. These impacts are as described for the No Action Alternative in Section IV.3.3.1.5.1.

IV.3.3.4.5.2 Impacts of BLM LUPA Decisions Outside of Plan Area

The only changes outside the Plan Area would be the designation of NLCS lands, ACECs, and National Scenic and Historic Trails management corridors, and VRM classes and new land allocations to replace MUCs on CDCA lands. BLM land designations and management actions would not materially affect GHG emissions.

IV.3.3.4.6 CEQA Significance Determination for Alternative 2

MC-1: Construction or operation of Plan components would generate GHG emissions. All of the Alternative 2 Plan components from the renewable energy technologies and transmission would result in construction, operations and maintenance, and decommissioning activities and a loss of carbon uptake due to vegetation removal. Because the level of GHG emissions avoided by producing electricity from renewable resources would exceed the GHG emissions caused by development activities and land use conversion, Impact MC-1 would be less than significant, requiring no mitigation.

MC-2: Construction or operation of Plan components would conflict with an applicable plan, policy, or regulation intended to address climate change. The GHG emissions avoided as a result of projects producing electricity under Alternative 2 would be consistent with and would not conflict with the California Global Warming Solutions Act, GHG reduction goals, and the Climate Change Scoping Plan. Individual projects would cause no other potential conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Impact MC-2 would therefore be less than significant, requiring no mitigation.

IV.3.3.4.7 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.3.3.4.7.1 Alternative 2 Compared With Preferred Alternative for Plan-wide DRECP

Alternative 2 would produce greater levels of electricity compared with the Preferred Alternative as a result of the mix of renewable energy resources. This would occur with a lower loss of natural carbon uptake because Alternative 2 would disturb 9,000 fewer acres than under the Preferred Alternative.

The mix of technologies in Alternative 2 would provide 5,890,000 less MWh of solar and distributed generation, 8,017,000 more MWh wind generation, and the same amount of geothermal generation as the Preferred Alternative (see Tables IV.3-4 and IV.3-8). When the avoided or displaced GHG emissions are calculated (see Section IV.3.3.1.1.1 for the rationale), the generation mix of Alternative 2 would displace 800,000 $MTCO_2E$ more GHG emissions per year, which means a greater level of GHG emissions would be reduced (i.e., displaced) under Alternative 2 than under the Preferred Alternative.

IV.3.3.4.7.2 Alternative 2 Compared With Preferred Alternative for the BLM LUPA

The BLM land designations and management actions would not change the calculations for Impacts MC-1 and MC-2 analyzed under Alternative 2 and the Preferred Alternative. The range of loss of natural carbon uptake would remain the same, as well as the MWh produced under both alternatives and the GHG emissions reductions. The streamlined development is anticipated to occur under both of the alternatives.

IV.3.3.4.7.3 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.3.3.2.1 for the Plan-wide analysis. As a result, the comparison of Alternative 2 with the Preferred Alternative for the NCCP is the same as defined for the Plan-wide DRECP.

IV.3.3.4.7.4 Alternative 2 Compared With Preferred Alternative for the GCP

The impacts under Alternative 2 and the Preferred Alternative for the GCP would be similar to the Plan-wide analysis, and there are no expected changes.

IV.3.3.5 Alternative 3

IV.3.3.5.1 Plan-wide Impacts of Implementing the DRECP: Alternative 3

Alternative 3 assumes a mix of technologies producing 53.1 million MWh annually. The mix includes 16,000 MW of solar and distributed generation, 1,000 MW of wind, and 3,000 MW of geothermal, to achieve approximately 20,000 MW of generation capacity installed, built out, and on line by 2040.

IV.3.3.5.1.1 Plan-wide Impacts and Mitigation Measures from Renewable Energy and Transmission Development

Impact Assessment

Impact MC-1: Construction or operation of Plan components would generate GHG emissions.

All of the Plan components from the renewable energy and transmission technologies would result in construction, operations and maintenance, and decommissioning activities that would produce GHG emissions, as described for the No Action Alternative in Section IV.3.3.1.1.1. Emissions for the 2040 horizon appear here, although the year-to-year rates would vary as the renewable energy facilities and associated transmission capacity are built out over the life of the Plan to be on line by 2040. Separate discussions appear for the GHG emissions caused by construction activities plus operations activities, such as maintenance and inspection; the effects of land use conversion; and the indirect GHG emissions reductions that would occur because of the energy output provided by the renewable energy technologies.

Emissions from Development Activities: Construction, Operations, and Decommissioning. Projects developed under Alternative 3 are anticipated to produce 53,060,000 MWh of electricity per year from facilities having a combined capacity of approximately 20,000 MW upon being built out by 2040. Construction emissions plus operations

emissions to develop this capacity across the Plan Area would cause GHG emissions at a rate of approximately 200,000 $MTCO_2E$ per year during the life of the Plan.

Emissions Related to Land Use Conversion. There would be 150,000 acres of ground disturbance and vegetation removal due to renewable energy development under Alternative 3 (6,000 more acres than the Preferred Alternative). Development of transmission would disturb additional areas. Vegetation removal results in a loss of natural carbon uptake, although the actual amount of this loss is uncertain because it would depend on each particular development site, and data on rates of sequestration by vegetation and soils are approximations. Based on this loss of vegetation, Alternative 3 would reduce the rate of carbon uptake between 205,000 $MTCO_2E$ to 724,000 $MTCO_2E$ per year (see Table IV.3-9).

Table IV.3-9
Estimated Loss of Annual Carbon Uptake – Alternative 3

Ecoregion Subarea	Permanent Disturbance (acres)[1]	Carbon Sequestered ($MTCO_2E$), Low Est.[2]	Carbon Sequestered ($MTCO_2E$), High Est.[3]
Cadiz Valley and Chocolate Mountains	24,800	-30,300	-106,900
Imperial Borrego Valley	61,300	-74,800	-264,300
Kingston and Funeral Mountains	400	-500	-1,600
Mojave and Silurian Valley	7,300	-8,900	-31,600
Owens River Valley	3,000	-3,600	-12,700
Panamint Death Valley	2,300	0	0
Pinto Lucerne Valley and Eastern Slopes	17,600	-21,500	-75,900
Piute Valley and Sacramento Mountains	0	0	0
Providence and Bullion Mountains	2,300	-2,900	-10,100
West Mojave and Eastern Slopes	51,200	-62,400	-220,500
Total	**170,000**	**-205,000**	**-724,000**

[1] The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

[2] stimate for "average U.S. forests," including desert scrub environments. Desert scrub sequesters less carbon than other U.S. forest categories. http://www.epa.gov/cleanenergy/energy-resources/refs.html#pineforests.

[3] Estimate for "grasslands," as reported by the California Climate Action Registry and the California Emissions Estimator Model, which is a category that includes shrub communities that fall below the threshold values used in the forest land category (http://www.caleemod.com, Appendix A).

Emissions Avoided by Producing Electricity. The GHG emissions reductions for Alternative 3 would occur at the same displacement rates described for the No Action Alternative in Section IV.3.3.1.1.1. The GHG emissions reductions for Alternative 3 would be approximately 18,000,000 $MTCO_2E$ per year for the combined renewable energy technologies (see Table

IV.3-10). Because the GHG avoided from fossil fuel-fired power plants would greatly exceed the GHG emissions caused by renewable energy development activities and land use conversion, the electricity produced under Alternative 3 would reduce California's GHG emissions.

Table IV.3-10
Annual GHG Emissions Reductions – Alternative 3

Technology	Annual Production (MWh)	Avoided Emissions ($MTCO_2E$)
Solar[1]	35,070,000	13,200,000
Wind[1]	3,550,000	1,340,000
Geothermal[2]	14,450,000	3,410,000
Total	**53,100,000**	**18,000,000**

[1] Emissions avoided/displaced for solar and wind energy are 830 pounds per MWh (ARB 2010).
[2] Emissions avoided/displaced for geothermal energy are 520 pounds per MWh (ARB 2010).

Impact MC-2: Construction or operation of Plan components would conflict with an applicable plan, policy, or regulation intended to address climate change.

Projects developed under Alternative 3 would facilitate the GHG emissions reductions that California expects to achieve by generating electricity from renewable energy resources instead of fossil-fuel resources. This displacement of GHGs would be consistent with the California Global Warming Solutions Act, GHG reduction goals, and the Climate Change Scoping Plan (see Volume III, Section III.3.1.2). Individual renewable energy projects would cause no potential conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

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 Table IV.1-2 and Figure II.6-1 for Alternative 3 in Volume II. 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 climate change as it would within DFAs.

Special Analysis Areas. Designating the SAAs as conservation would have no impact to this resource. Impacts would be the same as those explained for the Plan-wide reserve design.

DRECP Variance Lands. DRECP Variance Lands represent the BLM Solar PEIS Variance Lands screened for the DRECP and 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 climate change 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. There are several ways in which the impacts of the renewable energy development covered by the Plan would be lessened. First, the Plan incorporates 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 at the project level 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 Alternative 3 (presented in Volume II, Section II.3.1.1) defines specific actions that would reduce the impacts of this alternative. The conservation strategy includes 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. None of the CMAs, including CMAs for air resources, specifically address or achieve reductions in GHG emissions.

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.3.3.1.1.1.

Mitigation Measures

Mitigation for GHG emissions is not required under Alternative 3 because the electricity produced by renewable energy projects would reduce California's overall GHG emissions from the electricity sector. The DRECP under Alternative 3 would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

IV.3.3.5.1.2 Impacts from Reserve Design

Alternative 3 would provide more than 8 million additional acres within the Plan Area with protective land designations. Establishing lands with protective designations provides GHG benefits because limiting development on the lands restricts the potential removal of vegetation, which would allow the natural carbon uptake of existing soils and vegetation to continue in these areas.

IV.3.3.5.2 Impacts of DRECP LUPA 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.3.3.5.2.1 Impacts from Renewable Energy and Transmission Development on BLM Land

Streamlining renewable energy development on BLM lands within the DFAs would not change the numeric calculations for Impacts MC-1 and MC-2. The range of loss of natural carbon uptake would remain the same, as well as the MWh produced under Alternative 3 and the GHG emissions reductions.

Streamlining development may result in the faster delivery of electricity to the grid, thereby achieving the GHG emissions reductions more quickly and maintaining consistency with the California Global Warming Solutions Act and the Climate Change Scoping Plan.

IV.3.3.5.2.2 Impacts of Changes to BLM Land Designations

The BLM LUPA land designations protect ecological, historical, cultural, scenic, scientific, and recreational resources and values. While other land uses within these areas are allowed, they must be compatible with the resources and values that the land designation is intended to protect. Establishing lands with protective designations provides GHG benefits.

IV.3.3.5.3 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.3.3.2.1 for the Plan-wide analysis.

IV.3.3.5.4 Impacts of General Conservation Plan: Alternative 3

The impacts of the GCP for Alternative 3 would be similar to those defined in Section IV.3.3.2.1 for the Plan-wide analysis, but they would occur on nonfederal lands only.

IV.3.3.5.5 Impacts Outside of Plan Area

IV.3.3.5.5.1 Impacts of Transmission Outside of Plan Area

The impacts of Outside of Plan Area transmission on meteorology and climate change would be the same under all alternatives. These impacts are as described for the No Action Alternative in Section IV.3.3.1.5.1.

IV.3.3.5.5.2 Impacts of BLM LUPA Decisions Outside of Plan Area

The only changes outside the Plan Area would be the designation of NLCS lands, ACECs, and National Scenic and Historic Trails management corridors, and VRM classes and new land allocations to replace MUCs on CDCA lands. BLM land designations and management actions would not materially affect GHG emissions.

IV.3.3.5.6 CEQA Significance Determination for Alternative 3

MC-1: Construction or operation of Plan components would generate GHG emissions. All of the Alternative 3 Plan components from the renewable energy technologies and transmission would result in construction, operations and maintenance, and decommissioning activities and a loss of carbon uptake due to vegetation removal. Because the level of GHG emissions avoided by producing electricity from renewable resources would exceed the GHG emissions caused by development activities and land use conversion, Impact MC-1 would be less than significant, requiring no mitigation.

MC-2: Construction or operation of Plan components would conflict with an applicable plan, policy, or regulation intended to address climate change. The GHG emissions avoided as a result of projects producing electricity under Alternative 3 would be consistent with and would not conflict with the California Global Warming Solutions Act, GHG reduction goals, and the Climate Change Scoping Plan. Individual projects would cause no other potential conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Impact MC-2 would therefore be less than significant, requiring no mitigation.

IV.3.3.5.7 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.3.3.5.7.1 Alternative 3 Compared With Preferred Alternative for Plan-wide DRECP

Alternative 3 would produce lower levels of electricity compared with the Preferred Alternative as a result of the mix of renewable energy resources. This would occur with a greater loss of natural carbon uptake because Alternative 3 would disturb an additional 8,000 acres when compared with the Preferred Alternative.

The mix of technologies in Alternative 3 would provide 3,995,000 more MWh of solar and distributed generation, 5,436,000 less MWh wind generation, and the same amount of geothermal generation as the Preferred Alternative (see Tables IV.3-4 and IV.3-10). When the avoided or displaced GHG emissions are calculated (see Section IV.3.3.1.1.1 for the rationale), the generation mix of Alternative 3 would displace 543,000 fewer $MTCO_2E$ GHG emissions per year, which means a lower level of GHG emissions would be reduced (i.e., displaced) under Alternative 3 than under the Preferred Alternative.

IV.3.3.5.7.2 Alternative 3 Compared With Preferred Alternative for the BLM LUPA

The BLM land designations and management actions would not change the calculations for Impacts MC-1 and MC-2 analyzed under Alternative 3 and the Preferred Alternative. The range of loss of natural carbon uptake would remain the same, as well as the MWh produced under both alternatives and the GHG emissions reductions. The streamlined development is anticipated to occur under both of the alternatives.

IV.3.3.5.7.3 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.3.3.2.1 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.3.3.5.7.4 Alternative 3 Compared With Preferred Alternative for the GCP

The impacts under Alternative 3 and the Preferred Alternative for the GCP would be similar to the Plan-wide analysis, and there are no expected changes.

IV.3.3.6 Alternative 4

IV.3.3.6.1 Plan-wide Impacts of Implementing the DRECP: Alternative 4

Alternative 4 assumes a mix of technologies producing 53.8 million MWh annually. The mix includes 15,000 MW of solar and distributed generation, 2,000 MW of wind, and 3,000 MW of geothermal, to achieve approximately 20,000 MW of generation capacity installed, built out, and on line by 2040.

IV.3.3.6.1.1 Plan-wide Impacts and Mitigation Measures from Renewable Energy and Transmission Development

Impact Assessment

Impact MC-1: Construction or operation of Plan components would generate GHG emissions.

All of the Plan components from the renewable energy technologies and transmission would result in construction, operations and maintenance, and decommissioning activities that would produce GHG emissions, as described for the No Action Alternative in Section IV.3.3.1.1.1. Emissions for the 2040 horizon appear here, although the year-to-year rates would vary as the renewable energy and transmission facilities are built out over the life of the Plan to be on line by 2040. Separate discussions appear for the GHG emissions caused by construction activities plus operations activities such as maintenance and inspection, the effects of land use conversion, and the indirect GHG emissions reductions that would occur because of the energy output provided by the renewable energy facilities.

Emissions from Development Activities: Construction, Operations, and Decommissioning. Projects developed under Alternative 4 are anticipated to produce 53,828,000 MWh of electricity per year from facilities with a combined capacity of approximately 20,000 MW when built out by 2040. Construction emissions plus operations emissions to develop this capacity across the Plan Area would cause GHG emissions at a rate of approximately 200,000 $MTCO_2E$ per year during the life of the Plan.

Emissions Related to Land Use Conversion. There would be 147,000 acres of ground disturbance and vegetation removal due to renewable energy development under Alternative 4 (3,000 more acres than under the Preferred Alternative). Development of transmission would disturb additional areas. Vegetation removal results in a loss of natural carbon uptake, although the actual amount of this loss is uncertain because it would depend on each particular development site, and data on rates of sequestration by vegetation and soils are approximations. Based on this loss of vegetation, Alternative 4 would reduce the rate of carbon uptake between 203,000 $MTCO_2E$ to 719,000 $MTCO_2E$ per year (see Table IV.3-11).

Table IV.3-11
Estimated Loss of Annual Carbon Uptake – Alternative 4

Ecoregion Subarea	Permanent Disturbance (acres)[1]	Carbon Sequestered ($MTCO_2E$), Low Est.[2]	Carbon Sequestered ($MTCO_2E$), High Est.[3]
Cadiz Valley and Chocolate Mountains	44,500	-54,200	-191,600
Imperial Borrego Valley	46,600	-56,800	-200,700
Kingston and Funeral Mountains	800	-1,000	-3,600
Mojave and Silurian Valley	6,500	-7,900	-28,000
Owens River Valley	2,500	-3,000	-10,700
Panamint Death Valley	800	0	0
Pinto Lucerne Valley and Eastern Slopes	12,800	-15,600	-55,000
Piute Valley and Sacramento Mountains	0	0	0
Providence and Bullion Mountains	1,100	-1,400	-4,800
West Mojave and Eastern Slopes	52,000	-63,500	-224,200
Total	**168,000**	**-203,000**	**-719,000**

[1] The following general rounding rules were applied to calculated values: values greater than 1,000 were rounded to nearest 1,000; values less than 1,000 and greater than 100 were rounded to the nearest 100; values of 100 or less were rounded to the nearest 10, and therefore totals may not sum due to rounding. In cases where subtotals are provided, the subtotals and the totals are individually rounded. The totals are not a sum of the rounded subtotals; therefore the subtotals may not sum to the total within the table.

[2] Estimate for "average U.S. forests," including desert scrub environments. Desert scrub sequesters less carbon than other U.S. forest categories. http://www.epa.gov/cleanenergy/energy-resources/refs.html#pineforests.

[3] Estimate for "grasslands," as reported by the California Climate Action Registry and the California Emissions Estimator Model, which is a category that includes shrub communities that fall below the threshold values used in the forest land category (http://www.caleemod.com, Appendix A).

Emissions Avoided by Producing Electricity. The GHG emissions reductions for Alternative 4 would occur at the same displacement rates described for the No Action Alternative in Section IV.3.3.1.1.1. These GHG emissions reductions for Alternative 4 would be approximately 18,200,000 $MTCO_2E$ per year for the combined renewable energy technologies (see Table IV.3-12). Because the GHG avoided from fossil fuel-fired power plants would greatly exceed the GHG emissions caused by renewable energy development activities and land use conversion, the electricity produced under Alternative 4 would reduce California's GHG emissions.

Table IV.3-12
Annual GHG Emissions Reductions – Alternative 4

Technology	Annual Production (MWh)	Avoided Emissions ($MTCO_2E$)
Solar[1]	32,940,000	12,400,000
Wind[1]	6,440,000	2,430,000

Table IV.3-12
Annual GHG Emissions Reductions – Alternative 4

Technology	Annual Production (MWh)	Avoided Emissions ($MTCO_2E$)
Geothermal[2]	14,450,000	3,410,000
Total	**53,800,000**	**18,200,000**

[1] Emissions avoided/displaced for solar and wind energy are 830 pounds per MWh (ARB 2010).
[2] Emissions avoided/displaced for geothermal energy are 520 pounds per MWh (ARB 2010).

Impact MC-2: Construction or operation of Plan components would conflict with an applicable plan, policy, or regulation intended to address climate change.

Projects developed under Alternative 4 would facilitate the GHG emissions reductions that California expects to achieve by generating electricity from renewable energy resources instead of from fossil-fuel resources. While GHG emissions would occur from projects planned under Alternative 4, as referenced in Impact MC-1, there would be GHG emissions reductions as electricity would be generated by renewable energy technologies rather than fossil-fuel technologies. This displacement of GHGs would be consistent with the California Global Warming Solutions Act, GHG reduction goals, and the Climate Change Scoping Plan (see Volume III, Section III.3.1.2). Individual renewable energy projects would cause no potential conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

Impacts in Study Area Lands

Future Assessment Areas. 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. 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.

DRECP Variance Lands. DRECP Variance Lands represent the BLM Solar PEIS Variance Lands screened for the DRECP and 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 climate change 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. There are several ways in which the impacts of the renewable energy development covered by the Plan would be lessened. First, the Plan incorporates 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 at the project level after implementation of CMAs and compliance with applicable laws and regulations, then specific mitigation measures are recommended in this section.

CMAs

The conservation strategy for Alternative 4 (presented in Volume II, Section II.3.1.1) defines specific actions that would reduce the impacts of this alternative. The conservation strategy includes 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. None of the CMAs, including CMAs for air resources, specifically address or achieve reductions in GHG emissions.

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.3.3.1.1.1.

Mitigation Measures

Mitigation for GHG emissions is not required under Alternative 4 because the electricity produced by renewable energy projects would reduce California's overall GHG emissions from the electricity sector. The DRECP under Alternative 4 would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

IV.3.3.6.1.2 Impacts from Reserve Design

Alternative 4 would provide more than 8 million additional acres within the Plan Area with protective land designations. Establishing lands with protective designations provides GHG benefits because limiting development on the lands restricts the potential removal of vegetation, which would allow the natural carbon uptake of existing soils and vegetation to continue in these areas.

IV.3.3.6.2 Impacts of DRECP LUPA 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.3.3.6.2.1 Impacts from Renewable Energy and Transmission Development on BLM Land

Streamlining renewable energy development on BLM lands within the DFAs would not change the numeric calculations for Impacts MC-1 and MC-2. The range of loss of natural carbon uptake would remain the same, as well as the MWh produced under Alternative 4 and the GHG emissions reductions.

Streamlining development may result in the faster delivery of electricity to the grid, thereby achieving the GHG emissions reductions more quickly and maintaining consistency with the California Global Warming Solutions Act and the Climate Change Scoping Plan.

IV.3.3.6.2.2 Impacts of Changes to BLM Land Designations

The BLM LUPA land designations protect ecological, historical, cultural, scenic, scientific, and recreational resources and values. While other land uses within these areas are allowed, they must be compatible with the resources and values that the land designation is intended to protect. Establishing lands with protective designations provides GHG benefits.

IV.3.3.6.3 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.3.3.2.1 for the Plan-wide analysis.

IV.3.3.6.4 Impacts of General Conservation Plan: Alternative 4

The impacts of the GCP for Alternative 4 would be similar to those defined in Section IV.3.3.2.1 for the Plan-wide analysis, but they would occur on nonfederal lands only.

IV.3.3.6.5 Impacts Outside of Plan Area

IV.3.3.6.5.1 Impacts of Transmission Outside of Plan Area

The impacts of transmission outside the Plan Area on meteorology and climate change would be the same under all alternatives. These impacts are as described for the No Action Alternative in Section IV.3.3.1.5.1.

IV.3.3.6.5.2 Impacts of BLM LUPA Decisions Outside of Plan Area

The only changes outside the Plan Area would be the designation of NLCS lands, ACECs, and National Scenic and Historic Trails management corridors, and VRM classes and new land allocations to replace MUCs on CDCA lands. BLM land designations and management actions would not materially affect GHG emissions.

IV.3.3.6.6 CEQA Significance Determination for Alternative 4

MC-1: Construction or operation of Plan components would generate GHG emissions. All of the Alternative 4 Plan components from the renewable energy technologies and transmission would result in construction, operations and maintenance, and decommissioning activities and a loss of carbon uptake due to vegetation removal. Because the level of GHG emissions avoided by producing electricity from renewable resources would exceed the GHG emissions caused by development activities and land use conversion, Impact MC-1 would be less than significant, requiring no mitigation.

MC-2: Construction or operation of Plan components would conflict with an applicable plan, policy, or regulation intended to address climate change. The GHG emissions avoided as a result of projects producing electricity under Alternative 4 would be consistent with and would not conflict with the California Global Warming Solutions Act, GHG reduction goals, and the Climate Change Scoping Plan. Individual projects would cause no other potential conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Impact MC-2 would therefore be less than significant, requiring no mitigation.

IV.3.3.6.7 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.3.3.6.7.1 Alternative 4 Compared With Preferred Alternative for Plan-wide DRECP

Alternative 4 would produce lower levels of electricity compared with the Preferred Alternative as a result of the mix of renewable energy resources. This would occur with a greater loss of natural carbon uptake because Alternative 4 would disturb an additional 5,375 acres when compared with the Preferred Alternative.

The mix of technologies in Alternative 4 would provide 1,866,000 more MWh of solar and distributed generation, 2,541,000 less MWh wind generation, and the same amount of geothermal generation as under the Preferred Alternative (see Tables IV.3-4 and IV.3-12).

When the avoided or displaced GHG emissions are calculated (see Section IV.3.3.1.1.1 for the rationale), the generation mix of Alternative 4 would displace 254,000 fewer $MTCO_2E$ GHG emissions per year, which means a lower level of GHG emissions would be reduced (i.e., displaced) under Alternative 4 than under the Preferred Alternative.

IV.3.3.6.7.2 Alternative 4 Compared With Preferred Alternative for the BLM LUPA

The BLM land designations and management actions would not change the calculations for Impacts MC-1 and MC-2 analyzed under Alternative 4 and the Preferred Alternative. The range of loss of natural carbon uptake would remain the same, as well as the MWh produced under both alternatives and the GHG emissions reductions. The streamlined development is anticipated to occur under both of the alternatives.

IV.3.3.6.7.3 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.3.3.2.1 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.3.3.6.7.4 Alternative 4 Compared With Preferred Alternative for the GCP

The impacts under Alternative 4 and the Preferred Alternative for the GCP would be similar to the Plan-wide analysis, and there are no expected changes.

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