D.18 Climate Change

This section addresses potential climate change impacts resulting from construction and operation of the Proposed PROJECT. Section D.18.1 provides a description of the existing setting/affected environment, and the applicable regulations are introduced in Section D.18.2. An analysis of the Proposed PROJECT impacts/environmental effects and discussion of mitigation are provided in Section D.18.3. An analysis of Proposed PROJECT alternatives is provided in Sections D.18.4 through D.18.7. Section D.18.8 provides mitigation monitoring, compliance, and reporting information; Section D.18.9 addresses residual impacts of the project; and Section D.18.10 lists the references cited in this section.

The analysis of greenhouse gases (GHGs) is a much different analysis than the analysis of criteria pollutants for several reasons. For criteria pollutants, significance thresholds are based on daily emissions because attainment or non-attainment is based on daily exceedances of applicable ambient air quality standards (AAQS). Furthermore, several AAQS are based on relatively short-term exposure effects on human health (e.g., 1-hour and 8-hour averages). Because the half-life of carbon dioxide (CO_2) is approximately 100 years, for example, the effects of GHGs are longer-term, affecting global climate over a relatively long time frame. As a result, the contribution of a project‘s GHG emissions is evaluated over a longer time frame than a single day.

With respect to the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) proposes that agencies should consider the direct and indirect GHG emissions from the action in scoping and, to the extent that scoping indicates that GHG emissions warrant consideration by the decision maker, quantified and disclosed in the environmental document (40 Code of Federal Regulations (CFR) 1508.25). In assessing direct emissions, an agency should look at the consequences of actions over which it has control or authority (*Department of Transportation et al. v. Public Citizen et al.* 2004). When a proposed federal action meets an applicable threshold for quantification and reporting, as discussed above, the CEQ proposes that the agency should also consider mitigation measures and reasonable alternatives to reduce proposed action-related GHG emissions. Analysis of emissions sources should take account of all phases and elements of the proposed action over its expected life, subject to reasonable limits based on feasibility and practicality.

For proposed actions evaluated in an Environmental Impact Statement (EIS), federal agencies typically describe their consideration of the energy requirements of a proposed action and the conservation potential of its alternatives (40 CFR 1502.16(e)). Within this description of energy requirements and conservation opportunities, agencies should evaluate GHG emissions

associated with energy use and mitigation opportunities and use this as a point of comparison between reasonable alternatives.

The CEQ further proposes that when scoping the impact of climate change on the proposal for agency action, the sensitivity, location, and timeframe of a proposed action will determine the degree to which consideration of these predictions or projections is warranted. As with analysis of any other present or future environment or resource condition, the observed and projected effects of climate change that warrant consideration are most appropriately described as part of the current and future state of the proposed action's affected environment (40 CFR 1502.15). Based on that description of climate change effects that warrant consideration, the agency may assess the extent that the effects of the proposal for agency action or its alternatives will add to, modify, or mitigate those effects. Such effects may include, but are not limited to, effects on the environment, public health and safety, and vulnerable populations who are more likely to be adversely affected by climate change. The final analysis documents an agency's assessment of the effects of the actions considered, including alternatives, on the affected environment.

D.18.1 Environmental Setting/Affected Environment

Methodology and Assumptions

This section provides a description of existing conditions, including a description of the greenhouse effect, effects of climate change globally and in California, and a summary of GHG emissions in California. Baseline information reviewed for this section includes San Diego Gas and Electric's (SDG&E's) Proponent's Environmental Assessment (PEA) for the East County (ECO) Substation Project (SDG&E 2009), Iberdrola Renewables' Applicant's Environmental Document for the Tule Wind Project (Iberdrola Renewables, Inc. 2010), and ENTRIX's Air Quality Emission Calculations for the Energia Sierra Juarez U.S. Generator-Tie (ESJ Gen-Tie) Project (ENTRIX 2010). The Campo, Manzanita, and Jordan wind energy projects are being analyzed at a program level in this EIR/EIS as no site-specific survey data is available. Due to the close proximity of these wind energy projects to the ECO Substation, Tule Wind, and ESJ Gen-Tie projects, a similar setting is assumed.

D.18.1.1 General Overview

Greenhouse Effect

Gases that trap heat in the atmosphere are often called GHGs. The greenhouse effect traps heat in the troposphere through a three-fold process: short-wave radiation emitted by the Sun is absorbed by the Earth; the Earth emits a portion of this energy in the form of long-wave radiation; and GHGs in the upper atmosphere absorb and emit this long-wave radiation into space and toward the Earth. This "trapping" of the long-wave (thermal) radiation emitted back

toward the Earth is the underlying process of the greenhouse effect. Principal GHGs include CO_2, methane (CH_4), nitrous oxide (N_2O), ozone (O_3), and water vapor (H_2O). Some GHGs, such as CO_2, CH_4, and N_2O, occur naturally and are emitted into the atmosphere through natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely byproducts of fossil fuel combustion, whereas CH_4 results mostly from off-gassing associated with agricultural practices and landfills. Manmade GHGs, which have a much greater heat-absorption potential than CO_2, include fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3), which are associated with certain industrial products and processes (CAT 2006).

The greenhouse effect is a natural process that contributes to regulating the Earth‘s temperature. Without it, the temperature of the Earth would be about 0°F (−18°C) instead of its present 57°F (14°C). Global climate change concerns are focused on whether human activities are leading to an enhancement of the greenhouse effect (National Climatic Data Center 2008).

The effect GHG has on climate change is measured as a combination of the mass of its emissions plus the potential of a gas or aerosol to trap heat in the atmosphere, known as its global warming potential (GWP). The GWP varies between GHGs; for example, the GWP of CH_4 is 21, and the GWP of N_2O is 310. Total GHG emissions are expressed as a function of how much warming would be caused by the same mass of CO_2. Thus, GHG gas emissions are typically measured in terms of pounds or tons of "CO_2 equivalent" (CO_2E).

Effects of Global Climate Change

According to the California Air Resources Board (CARB), some of the potential impacts in California of global climate change may include loss in snow pack, sea level rise, more extreme heat days per year, more high O_3 days, more large forest fires, and more drought years (CARB 2006). Several recent studies have attempted to explore the possible negative consequences that climate change, left unchecked, could have in California. These reports acknowledge that climate scientists‘ understanding of the complex global climate system, and the interplay of the various internal and external factors that affect climate change, remains too limited to yield scientifically valid conclusions on such a localized scale. Substantial work has been done at the international and national level to evaluate climatic impacts, but far less information is available on regional and local impacts.

The primary effect of global climate change has been a rise in average global tropospheric temperature of 0.2°C per decade, determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling using 2000 emission rates shows that further warming would occur, which would induce further changes in the global climate system during

the current century. Changes to the global climate system and ecosystems and to California would include, but would not be limited to, the following:

- The loss of sea ice and mountain snow pack, resulting in higher sea levels and higher sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere‘s ability to hold more water vapor at higher temperatures (IPCC 2007)
- Rise in global average sea level primarily due to thermal expansion and melting of glaciers, ice caps, and the Greenland and Antarctic ice sheets (IPCC 2007)
- Changes in weather that include widespread changes in precipitation, ocean salinity, and wind patterns, and more energetic aspects of extreme weather including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones (IPCC 2007)
- Decline of Sierra snowpack, which accounts for approximately half of the surface water storage in California, by 70% to as much as 90% over the next 100 years (CAT 2006)
- Increase in the number of days conducive to O_3 formation by 25% to 85% (depending on the future temperature scenario) in high O_3 areas of Los Angeles and the San Joaquin Valley by the end of the 21st century (CAT 2006)
- High potential for erosion of California‘s coastlines and sea water intrusion into the Delta and levee systems due to the rise in sea level (CAT 2006).

Carbon Sequestration in Desert Soils

Studies in the Mojave Desert and China have indicated that the world‘s deserts may sequester substantial amounts of carbon at levels similar to that of temperate forests (Stone 2008; Wohlfahrt et al. 2008). A study at a site northwest of Las Vegas, Nevada, in the Mojave Desert found surprising results in terms of carbon sequestration in the desert. The study found the magnitude of the net ecosystem CO2 exchange (NEE) estimates for this arid ecosystem was comparable to NEEs reported for many temperate forest and grassland ecosystems. The Mojave Desert study suggests that ―growth of cryptobiotic crust organisms (lichens, mosses, cyanobacteria) likely account for a significant portion of the carbon accretion,” along with increases in vascular plant cover during the study period (Wohlfahrt et al. 2008). A study in China‘s Gubantonggut Desert in 2005 found that the carbon uptake was not the result of biological activity in surface shrubs and crustal lichen, moss, and cyanobacteria. Rather, the mechanism appeared to be inorganic rather than organic, but the specific carbon pathways were not determined (Stone 2008). Other researchers, however, have reviewed these studies and stated that the results are ―incompatible with existing measurements of net primary production and

carbon pools in deserts," and cautioned against using the results to explain a "long sought "missing sink"[1] for atmospheric carbon" (Schlesinger et al. 2009).

To date, these studies do not indicate a complete understanding of the mechanism by which CO2 is taken up by desert soils and flora. Specifically, the studies do not suggest that temporary disruption of desert soils during construction of a project would release CO2 or eliminate or reduce the potential carbon sequestration capacity of desert soils, and if it did occur, the mechanism by which it would occur (i.e., inorganic or biological uptake).

Contributions to Greenhouse Gas Emissions

According to the 2004 GHG inventory data CARB compiled for the California 1990 GHG emissions inventory, California emitted emissions of 484 million metric tons of CO_2E ($MMTCO_2E$), including emissions resulting from out-of-state electrical generation (CARB 2007). The primary contributors to GHG emissions in California are transportation, electric power production from both in-state and out-of-state sources, industry, agriculture and forestry, and other sources, which include commercial and residential activities. These primary contributors to California's GHG emissions and their relative contributions in 2004 are presented in Table D.18-1, Greenhouse Gas Sources in California.

Table D.18-1
Greenhouse Gas Sources in California

Source Category	Annual GHG Emissions ($MMTCO_2E$)	Percent of Total
Agriculture	27.9	5.8
Commercial uses	12.8	2.6
Electricity generation	119.8 [a]	24.7
Forestry (excluding sinks)	0.2	0.0
Industrial uses	96.2	19.9
Residential uses	29.1	6.0
Transportation	182.4	37.7
Other [b]	16.0	3.3
Totals	**484.4**	**100.0**

Notes:
a Includes emissions associated with imported electricity, which account for 61.3 $MMTCO_2E$ annually.
b Unspecified combustion and use of ozone-depleting substances.
Source: CARB 2007.

[1] The "missing sink" for atmospheric CO_2 refers to the unexplained fate of about one-third of the CO_2 emitted annually from human activities (Schlesinger et al. 2009).

D.18.2 Applicable Regulations, Plans, and Standards

This section discusses federal, state, and regional environmental regulations, plans, and standards applicable to the Proposed PROJECT, as well as the Campo, Manzanita, and Jordan wind energy projects. In addition to the federal regulations identified, the Campo and Manzanita wind energy projects may be subject to the Bureau of Indian Affairs' (BIA's) policies and regulations and tribe-specific policies and plans.

D.18.2.1 Federal Regulations

Massachusetts v. U.S. Environmental Protection Agency (EPA)

In *Massachusetts v. EPA*, the U.S. Supreme Court held that EPA has the statutory authority under Section 202 of the Clean Air Act to regulate GHGs from new motor vehicles because GHGs meet the Clean Air Act definition of an air pollutant (*Massachusetts v. EPA* 2007). The court did not hold that the EPA was required to regulate GHG emissions; however, it indicated that the agency must decide whether GHGs from motor vehicles cause or contribute to air pollution that is reasonably anticipated to endanger public health or welfare.

In *Massachusetts v. EPA*, the court directed the administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the administrator is required to follow the language of Section 202(a) of the Clean Air Act. On December 7, 2009, the administrator signed a final rule with two distinct findings regarding GHGs under Section 202(a) of the Clean Air Act:

- Elevated concentrations of GHGs—CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations. This is referred to as the endangerment finding.
- The combined emissions of GHGs—CO_2, CH_4, N_2O, and HFCs—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is referred to as the cause or contribute finding.

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the Clean Air Act.

Council on Environmental Quality (CEQ), Guidance for Considering GHG Emissions and Climate Change

In February 2010, the CEQ issued draft guidance for considering GHG emissions and environmental effects on climate change for federal actions in accordance with Section 102 of NEPA and the CEQ Regulations for Implementing the Procedural Provisions of NEPA, 40 CFR Parts 1500–1508 (CEQ 2010). The draft guidance was released for public comment on February 23, 2010, for a 60-day period ending May 24, 2010. It has not been finalized as of this writing. The draft guidance for analyzing GHG emissions state that federal actions should consider (CEQ 2010):

(1) The GHG emissions effects of a proposed action and alternative actions

(2) The relationship of climate change effects to a proposed action or alternatives, including the relationship to proposal design, environmental impacts, mitigation and adaptation measures.

The draft guidance recommends that if a proposed federal action would be anticipated to result in excess of 25,000 metric tons of CO_2 per year ($MTCO_2E$/yr) of direct GHG emissions, a quantitative and qualitative assessment should be conducted. CEQ indicates that the 25,000 $MTCO_2E$/yr level should be used as an indicator for further environmental assessment, and not as an established threshold in the determination of significant effects. CEQ also recommends that GHG emissions be discussed in a global context reflecting the global nature in the accumulation of GHGs (without extensive speculation as to the project‘s specific impacts on global climate change), while also providing quantitative analysis on project-level emissions and impacts that would occur within the spatial and temporal boundaries over which the agency has jurisdiction. In this light, the draft guidance state that ~~in~~ the agency‘s analysis of direct effects, it would be appropriate to: (1) quantify cumulative emissions over the life of the project; (2) discuss measures to reduce GHG emissions, including consideration of reasonable alternatives; and (3) qualitatively discuss the link between such GHG emissions and climate change.”

Moreover, the draft guidance suggest that agencies proposing a federal action that may generate substantial GHG emissions also consider impacts on vulnerable communities including tribal and Alaska native communities where these impacts would have the greatest adverse effects (CEQ 2010).

D.18.2.2 State Laws and Regulations

Senate Bill 1078

Approved by Governor Gray Davis in September 2002, Senate Bill (SB) 1078 established the Renewables Portfolio Standard (RPS) program, which requires an annual increase in renewable generation by the utilities equivalent to at least 1% of sales, with an aggregate goal of 20% by 2017. This goal was subsequently accelerated, requiring utilities to obtain 20% of their power from renewable sources by 2010 (see SB 107 and Executive Order S-14-08).

Executive Order S-3-05

In June 2005, Governor Arnold Schwarzenegger established California's GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010; GHG emissions should be reduced to 1990 levels by 2020; and GHG emissions should be reduced to 80% below 1990 levels by 2050. The Secretary of the California Environmental Protection Agency is required to coordinate efforts of various agencies in order to collectively and efficiently reduce GHGs.

Representatives from several state agencies comprise the Climate Action Team, which is responsible for implementing global warming emissions reduction programs. The Climate Action Team fulfilled its report requirements through the March 2006 Climate Action Team Report to Governor Schwarzenegger and the legislature (CAT 2006). A second biennial report, released in May 2010 (CAT 2010), expands on the policy oriented in the 2006 assessment. The 2010 report provides new information and scientific findings regarding the development of new climate and sea-level projections using new information and tools that have recently become available, evaluating climate change within the context of broader soil changes, such as land use changes and demographics.

Senate Bill 107

Approved by Governor Schwarzenegger on September 26, 2006, SB 107 requires investor-owned utilities such as Pacific Gas and Electric, Southern California Edison, and SDG&E to generate 20% of their electricity from renewable sources by 2010. Previously, state law required that this target be achieved by 2017 (see SB 1078).

Assembly Bill 32

On September 27, 2006, Governor Schwarzenegger signed into law the California Global Warming Solutions Act of 2006 (AB 32). AB 32's GHG emissions limit is equivalent to the 1990 levels, which are to be achieved by 2020. The 1990 levels are approximately 30% below ~~"b~~business-as-usual" emissions levels in 2020. Business-as-usual conditions represent what would

occur in the absence of any GHG reduction actions. CARB estimates the statewide 2020 business-as-usual GHG emissions will be 596 $MMTCO_2E$.

CARB has been assigned to carry out and develop the programs and requirements necessary to achieve the goals of AB 32. Under AB 32, CARB must adopt regulations requiring the reporting and verification of statewide GHG emissions. This program will be used to monitor and enforce compliance with the established standards. CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 allows CARB to adopt market-based compliance mechanisms to meet the specified requirements. Finally, CARB is ultimately responsible for monitoring compliance and enforcing any rule, regulation, order, emission limitation, emission reduction measure, or market-based compliance mechanism adopted.

As required under AB 32, on December 6, 2007, CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 $MMTCO_2E$. On December 11, 2008, CARB approved the required Climate Change Scoping Plan (Scoping Plan) to achieve the goals of AB 32. The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California‘s GHG emissions. The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all CARB and Climate Action Team early actions and additional GHG reduction measures by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program. Additional development of these measures and adoption of the appropriate regulations will occur over the next 2 years, becoming effective by January 1, 2012. Emission reductions from the recommended measures in the Scoping Plan total 169 $MMTCO_2E$, which will allow California to attain the 2020 emissions limit of 427 $MMTCO_2E$, a 30% reduction from CARB‘s 2020 estimated statewide business-as-usual GHG emissions of 596 $MMTCO_2E$. The key elements of the Scoping Plan include the following (CARB 2010):

- Expanding and strengthening existing energy efficiency programs, as well as building and appliance standards
- Achieving a statewide renewable energy mix of 33%
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85% of California‘s GHG emissions
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets

- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard
- Creating targeted fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation.

Senate Bill 1368

In September 2006, Governor Schwarzenegger signed SB 1368, which requires the California Energy Commission (CEC) to develop and adopt regulations for GHG emissions performance standards for the long-term procurement of electricity by local, publicly owned utilities. These standards must be consistent with the standards adopted by the California Public Utilities Commission (CPUC). On January 25, 2007, the CPUC adopted an Emissions Performance Standard for any long-term power commitments made by the state's electrical utilities. Utilities are not allowed to enter into a long-term commitment to buy baseload power from power plants that have CO_2 emissions greater than 1,100 pounds (0.5 metric ton) per megawatt-hour. On May 23, 2007, the CEC also adopted a performance standard consistent with that adopted by the CPUC.

Senate Bill 97

In August 2007, the legislature enacted SB 97 (Dutton), which directs the Governor's Office of Planning and Research (OPR) to develop guidelines under the California Environmental Quality Act (CEQA) for the mitigation of GHG emissions. OPR was to develop proposed guidelines by July 1, 2009, and the Natural Resources Agency was directed to adopt guidelines by January 1, 2010.

The Natural Resources Agency adopted CEQA Guidelines Amendments on December 30, 2009 (California Natural Resources Agency 2009). The amendments became effective on March 18, 2010. The amended guidelines establish several new CEQA requirements concerning the analysis of GHGs, including the following:

- Requiring a lead agency to ~~"~~make a good faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project" (Section 15064.4(a))
- Providing a lead agency with the discretion to determine whether to use quantitative or qualitative analysis or performance standards to determine the significance of GHG emissions resulting from a particular project (Section 15064.4(a))

- Requiring a lead agency to consider the following factors when assessing the significant impacts from GHG emissions on the environment:
    - The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting
    - Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project
    - The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (Section 15064.4(b))
- Allowing lead agencies to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures, including offsets that are not otherwise required (Section 15126.4(c)).

CARB and South Coast Air Quality Management District's GHG Significance Thresholds

As part of the SB 97 update to the CEQA Guidelines, OPR requested that CARB recommend statewide interim thresholds of significance for GHGs. In October 2008, CARB presented a Preliminary Draft Staff Proposal with a threshold of 7,000 $MTCO_2E$/yr for operational emissions (excluding transportation-related emissions) from industrial projects (CARB 2008). To date, CARB has not adopted this threshold nor proposed alternative thresholds. In December 2008, the South Coast Air Quality Management District (SCAQMD) adopted an interim threshold of 10,000 $MTCO_2E$/yr (operational emissions plus construction emissions amortized over 30 years) for ~~"in~~industrial" projects for which the SCAQMD is the lead agency, and it is in the process of developing guidelines for projects for which other agencies are the lead agency.

Executive Order S-14-08

On November 17, 2008, Governor Schwarzenegger issued Executive Order S-14-08. This Executive Order focuses on the contribution of renewable energy sources to meet the electrical needs of California while reducing the GHG emissions from the electrical sector. The governor's order requires that all retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the order directs state agencies to take appropriate actions to facilitate reaching this target. The Resources Agency, through collaboration with the CEC and California Department of Fish and Game (CDFG), is directed to lead this effort. Pursuant to a Memorandum of Understanding between the CEC and CDFG creating the Renewable Energy Action Team, these agencies will create a ~~"o~~ne-stop" process for permitting renewable energy power plants.

Executive Order S-21-09

On September 15, 2009, Governor Schwarzenegger issued Executive Order S-21-09. This Executive Order directed CARB to adopt a regulation consistent with the goal of Executive Order S-14-08 by July 31, 2010. CARB is further directed to work with the CPUC and CEC to ensure that the regulation builds upon the RPS program and is applicable to investor-owned utilities, publicly owned utilities, direct access providers, and community choice providers. Under this order, CARB is to give the highest priority to those renewable resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health and that can be developed most quickly in support of reliable, efficient, and cost-effective electricity system operations.

D.18.3 Environmental Effects

D.18.3.1 Definition and Use of CEQA Significance Criteria/Indicators under NEPA

GHG emissions contributing to global climate change have only recently been addressed in CEQA documents, such that CEQA and case law do not provide much guidance relative to their assessment. CEQA does, however, provide guidance regarding topics such as climate change (14 CCR 15144). Section 15144 notes that preparation of an environmental impact analysis document necessarily involves some degree of forecasting. While forecasting the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can.

The San Diego Air Pollution Control District (SDAPCD) has not established CEQA significance thresholds for GHG emissions. However, the Natural Resources Agency adopted CEQA Guidelines Amendments on December 30, 2009, which are now effective (California Natural Resources Agency 2009). The following significance criteria are based on the CEQA checklist identified in Appendix G of the CEQA Guidelines. Under CEQA, GHG impacts would be considered significant if the project would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Neither the State of California nor the SDAPCD have adopted emission-based thresholds for GHG emissions under CEQA. OPR's Technical Advisory titled *CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review* states, ~~"~~public agencies are encouraged but not required to adopt thresholds of significance for

environmental impacts. Even in the absence of clearly defined thresholds for GHG emissions, the law requires that such emissions from CEQA projects must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact" (OPR 2008, p. 4)

As indicated in Section D.18.2.2, the SCAQMD adopted an interim significance threshold of 10,000 metric tons of CO_2E for industrial projects in December 2008. The OPR advises, ~~"~~Even in the absence of clearly defined thresholds for GHG emissions, the law requires that such emissions from CEQA projects must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact" (OPR 2008, p.4). Furthermore, the OPR advisory indicates, ~~"~~In the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a ~~"~~significant impact,' individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice" (OPR 2008, p.6).

To assess the impacts of the significance of the Proposed PROJECT's GHG emissions with respect to CEQA, the CPUC will apply the SCAQMD significance threshold of 10,000 $MTCO_2E/yr$, including all operational emissions and the construction emissions amortized over 30 years for this project. In the absence of a rulemaking to establish a GHG emission threshold of significance to be applied uniformly throughout the state, the CPUC is assessing the impacts of GHG emissions on a case-by-case basis. In areas of the state in which the local air pollution control district or air quality management district has not adopted a threshold of significance, the CPUC will apply a threshold that has been adopted by CARB or another air pollution control district or air quality management district. In this instance, the CPUC is using the SCAQMD threshold because CARB has yet to adopt a threshold; the SCAQMD threshold was adopted after rigorous public vetting and, at the time of this writing, it is the only air district to adopt an emission-based threshold.

Importantly, the CPUC's Emissions Performance Standard for long-term power commitments (discussed in Section D.18.2.2) is not applicable to this project, as it relates to power generated from conventional power plants and their associated CO_2 emissions. The Proposed PROJECT would generate and/or transmit power generated by renewable sources.

For NEPA purposes, the level of 25,000 $MTCO_2E$ from the draft CEQ guidance discussed in Section D.18.2.1 will be used as an indicator as to whether the project-related GHG emissions during construction or operation would result in an adverse impact.

D.18.3.2 Applicant Proposed Measures

ECO Substation Project

Applicant Proposed Measures (APMs) ECO-AIR-12 and ECO-AIR-13, which call for routine inspection and maintenance of SF_6 equipment, and evaluate the feasibility of using rooftop photovoltaic panels as part of the ECO Substation Project, as described in Section B.3.4, ECO Substation Project Applicant Proposed Measures, of this Environmental Impact Report (EIR)/EIS, were proposed by SDG&E to reduce impacts related to GHG emissions).

Tule Wind Project

Pacific Wind Development has not proposed APMs to reduce impacts related to GHG emissions.

ESJ Gen-Tie Project

ESJ U.S. Transmission, LLC, has not proposed APMs to reduce impacts related to GHG emissions.

D.18.3.3 Direct and Indirect Effects

Table D.18-2 lists the impacts and classifications of impacts under CEQA identified for the Proposed PROJECT. Cumulative effects are analyzed in Section F of this EIR/EIS.

Table D.18-2
Climate Change Impacts

Impact No.	Description	Classification
ECO Substation – Greenhouse Gas Impacts		
ECO-GHG-1	Project construction would cause a net increase of greenhouse gas emissions.	Class III
ECO-GHG-2	Project operation would cause a net increase of greenhouse gas emissions.	Class III
ECO-GHG-3	Project activities would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Class III
Tule Wind – Greenhouse Gas Impacts		
Tule-GHG-1	Project construction would cause a net increase of greenhouse gas emissions.	Class III
Tule-GHG-2	Project operation would cause a net increase of greenhouse gas emissions.	Class III
Tule-GHG-3	Project activities would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Class III
ESJ Gen-Tie – Greenhouse Gas Impacts		
ESJ-GHG-1	Project construction would cause a net increase of greenhouse gas emissions.	Class III
ESJ-GHG-2	Project operation would cause a net increase of greenhouse gas emissions.	Class III
ESJ-GHG-3	Project activities would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Class III

Table D.18-2 (Continued)

Impact No.	Description	Classification
Proposed PROJECT (COMBINED – including Campo, Manzanita, and Jordan Wind Energy)		
GHG-1	Project construction would cause a net increase of greenhouse gas emissions.	Class III
GHG-2	Project operation would cause a net increase of greenhouse gas emissions.	Class III
GHG-3	Project activities would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Class III

Environmental Impacts/Environmental Effects

Direct and Indirect *(Note: cumulative effects are addressed in Section F of this EIR/EIS)*

Impact GHG-1: Project construction would cause a net increase of greenhouse gas emissions.

Impact GHG-2: Project operation would cause a net increase of greenhouse gas emissions.

ECO Substation Project

Construction Emissions

GHG emissions were simulated for the construction phase of all four of the ECO Substation Project's components. These GHG emissions will occur as a result of burning the fuel required to operate the on-site construction equipment and mobilize work crews to and from the ECO Substation Project site. Emissions of CO_2 were simulated using the URBEMIS 2007 land use and air emissions model. The resulting CO_2 emissions were then used in conjunction with the methods from the California Climate Action Registry General Reporting Protocol Version 3.1 and data from the California Statewide GHG Inventory to develop estimated CH_4 and N_2O emissions. Each chemical's GWP was multiplied by its emission rate to produce CO_2E emission rates (CO_2, CH_4, and N_2O have GWPs of 1, 21, and 310, respectively). The CO_2E annual emissions indicated in the ECO Substation PEA (SDG&E 2009) were adjusted to estimate annual emissions by calendar year (refer to Appendix 8, Air Quality Calculations (Dudek 2010)). Table D.18-3, Estimated Construction Greenhouse Gas Emissions for the ECO Substation Project, shows the annual and total GHG construction emissions associated with construction of the ECO Substation Project.

Table D.18-3
Estimated Construction Greenhouse Gas Emissions for the ECO Substation Project

Construction Year	CO_2E Emissions (total metric tons/year)
2010	3,664
2011	8,980
2012	1,290
Total	13,934
Amortized Annual Emissions	464

Sources: SDG&E 2009; Appendix 8, Air Quality Calculations.

The maximum annual construction-related GHG emissions would be less than the NEPA indicator of 25,000 $MTCO_2E$/yr. Identified impacts would not be adverse. The amortized annual emissions are added to the operational emissions for comparison with the CEQA significance threshold, as discussed below.

Operational Emissions

Similar to the construction phase of the ECO Substation Project, GHG emissions during operations and maintenance (O&M) will be the result of burning fuel during vehicle and equipment operation and electrical generation used to power the ECO and Boulevard substations. In addition, fugitive emissions of SF_6—a potent GHG with a GWP of 23,900—will result from the operation of transmission-line equipment that will be installed at the ECO and Boulevard substations. GHG emissions from the O&M of the ECO Substation Project were estimated to be approximately 3,668 $MTCO_2E$/yr (SDG&E 2009).

The operational emissions would be less than the NEPA indicator of 25,000 $MTCO_2E$/year. Identified operational impacts would not be adverse. In addition, when combined with the amortized annual construction emissions, the ECO Substation Project's GHG emissions would be 4,132 $MTCO_2E$/yr. The combined GHG emissions would be well below the CEQA significance threshold of 10,000 $MTCO_2E$ per year. Furthermore, APMs ECO-AIR-12 and ECO-AIR-13, which call for routine inspection and maintenance of SF_6 equipment, and which evaluate the feasibility of using rooftop photovoltaic panels as part of the ECO Substation Project, would further reduce impacts related to GHG emissions. Under CEQA, impacts would be considered less than significant (Class III). In addition, the project would facilitate interconnection of renewable sources of energy, thereby potentially decreasing overall emissions attributable to electrical generation in California.

Tule Wind Project

Construction Emissions

GHG emissions were simulated for the construction phase of the Tule Wind Project. These GHG emissions will occur as a result of burning the fuel required to operate the on-site construction equipment and mobilize work crews to and from the Tule Wind Project site. The CO_2E annual emissions indicated in the Tule Wind Applicant's Environmental Document (Iberdrola Renewables, Inc. 2010) were adjusted to account for delivery vehicles and worker vehicles, and emission factors used for construction equipment were revised as well (refer to Appendix 8, Air Quality Calculations). Table D.18-4, Estimated Construction Greenhouse Gas Emissions for the Tule Wind Project, shows the total annual GHG construction emissions associated with construction of the Tule Wind Project.

Table D.18-4
Estimated Construction Greenhouse Gas Emissions for the Tule Wind Project

Construction Year	CO_2E Emissions (total metric tons/year)
2010	625
2011	7,208
2012	7,296
Total	15,129
Amortized Annual Emissions	504

Sources: Iberdrola Renewables, Inc. 2010; Appendix 8, Air Quality Calculations.

The maximum annual construction-related GHG emissions would be less than the NEPA indicator of 25,000 $MTCO_2E$/yr. Identified impacts would not be adverse. The amortized annual emissions are added to the operational emissions for comparison with the CEQA significance threshold, as discussed below.

The expected lifespan of the Tule Wind Project is 30 years. Decommissioning activities would be expected to result in substantially lower GHG emissions due to more stringent engine and motor vehicle standards (e.g., in 30 years all off-road diesel engines will meet Tier 4 requirements at a minimum). Additionally, prior to termination of the ROW authorization, BLM and San Diego County will develop and approve a decommissioning plan. Impacts resulting from decommissioning would be well below the NEPA indicator of 25,000 $MTCO_2E$/yr, and would not be adverse.

Operational Emissions

The O&M of the project would contribute a small amount of vehicle emissions from up to 12 permanent employees. GHG emissions from the O&M of the Tule Wind Project were estimated to be approximately 142 $MTCO_2E$/yr (see Appendix 8, Air Quality Calculations).

The operational emissions would be less than the NEPA indicator of 25,000 $MTCO_2E$/yr. Identified operational impacts would not be adverse. In addition, when combined with the amortized annual construction emissions, the Tule Wind Project's GHG emissions would be 646 $MTCO_2E$/yr. The combined GHG emissions would be well below the CEQA significance threshold of 10,000 $MTCO_2E$/yr. Under CEQA, impacts would be considered less than significant (Class III). In addition, the project would create a renewable source of energy, thereby potentially decreasing overall emissions attributable to electrical generation in California.

ESJ Gen-Tie Project

Construction Emissions

GHG emissions were simulated for the construction phase of the ESJ Gen-Tie Project. These GHG emissions will occur as a result of burning the fuel required to operate the on-site construction equipment and mobilize work crews to and from the ESJ Gen-Tie Project site. Additionally, the GHG emissions associated with transporting wind turbine components from San Diego, Houston, and the Midwest for construction of the wind farm were accounted for to the extent that these emissions would occur within California (San Diego and Imperial counties). The CO_2E annual emissions indicated in the air quality emissions calculations for the ESJ Gen-Tie Project (ENTRIX 2010) were adjusted to account for only the emissions that would occur within California (refer to Appendix 8, Air Quality Calculations). Table D.18-5, Estimated Construction Greenhouse Gas Emissions for the ESJ Gen-Tie Project, shows the total annual GHG construction emissions associated with construction of the ESJ Gen-Tie Project.

Table D.18-5
Estimated Construction Greenhouse Emissions for the ESJ Gen-Tie Project

Construction Year	CO_2E Emissions (total metric tons/year)
2011	1,345
Amortized Annual Emissions	45

Sources: ENTRIX 2010; Appendix 8, Air Quality Calculations.

The maximum annual construction-related GHG emissions would be below the NEPA indicator of 25,000 $MTCO_2E$/yr. Identified impacts would not be adverse. The amortized annual emissions

are added to the operational emissions for comparison with the CEQA significance threshold, as discussed below.

Operational Emissions

Upon completion of construction activities, periodic vehicle trips would be required for maintenance and inspection of the ESJ Gen-Tie Project. Operation of the project would result in approximately 2 to 3 workers accessing the site on a periodic basis. Operation of the project would not require a substantial number of new vehicle trips. The operational emissions would be less than the NEPA indicator of 25,000 $MTCO_2E$/yr. Identified operational impacts would not be adverse. In addition, when combined with the amortized annual construction emissions, the ESJ Gen-Tie Project's GHG emissions would be 45 $MTCO_2E$/yr. The combined GHG emissions would be well below the CEQA significance threshold of 10,000 $MTCO_2E$/yr. Under CEQA, impacts would be considered less than significant (Class III). In addition, the project would create a renewable source of energy, thereby potentially decreasing overall emissions attributable to electrical generation in California.

Proposed PROJECT

Construction Emissions

Table D.18-6, Estimated Construction Greenhouse Gas Emissions for the Proposed PROJECT, shows the total annual GHG construction emissions associated with construction of the Proposed PROJECT.

Table D.18-6
Estimated Construction Greenhouse Gas Emissions for the Proposed PROJECT

Construction Year	CO_2E Emissions (total metric tons/year)
2010	4,331
2011	17,502
2012	8,586
Total	30,419
Amortized Annual Emissions	1,014

Source: Appendix 8, Air Quality Calculations.

The construction-related GHG emissions will be less than the NEPA indicator of 25,000 $MTCO_2E$/yr for the Proposed PROJECT, including the Campo, Manzanita, and Jordan wind energy projects. Although sufficient project-level information has yet to be developed for the Campo, Manzanita, and Jordan wind energy project components to the Proposed PROJECT, it is estimated that these three wind projects would generate similar construction-related emissions as the Tule Wind Project component because they would utilize similar construction equipment,

workers, and number of haul routes during development. The Jordan wind energy project is proposed to be developed in 2013, while the Campo and Manzanita wind energy projects are expected to be constructed in a similar time frame as the Proposed PROJECT (2011 – 2012). Identified impacts would not be adverse. The amortized annual emissions are added to the operational emissions for comparison with the CEQA significance threshold, as discussed below.

Operational Emissions

GHG emissions during O&M of the Proposed PROECT will be the result of burning fuel during vehicle and equipment operation, electrical generation used to power the ECO and Boulevard substations, and fugitive emissions of SF_6 from the operation of transmission-line equipment. GHG emissions from the O&M of the Proposed PROJECT were estimated to be approximately 3,819 $MTCO_2E$/yr. Although sufficient project-level information has yet to be developed for the Campo, Manzanita, and Jordan wind energy project components to the Proposed PROJECT, it is assumed that these three wind projects would generate similar GHG emissions during O&M as the Tule Wind project due a small amount of vehicle emissions from employees trips to the facilities. The operational emissions are less than the NEPA indicator of 25,000 $MTCO_2E$/yr. Identified operational impacts would not be adverse. In addition, when combined with the amortized annual construction emissions, the Proposed PROJECT‘s GHG emissions would be 4,824 $MTCO_2E$/yr. The combined GHG emissions will be well below the CEQA significance threshold of 10,000 $MTCO_2E$/yr. Under CEQA, impacts would be considered less than significant (Class III).

Impact GHG-3: Project activities would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

California‘s current RPS is intended to increase the share of renewable energy to 20% by the end of 2010. Based on Governor Schwarzenegger‘s call for a statewide 33% RPS, the Climate Change Scoping Plan anticipates that California will have 33% of its electricity provided by renewable resources by 2020. Additionally, AB 32 calls for a reduction in GHG emissions to 1990 levels by 2020. Over their lifespans, the individual ECO Substation, Tule Wind, and ESJ projects, as well as the Proposed PROJECT as a whole, would assist in the attainment of the state‘s goals by utilizing a renewable source of energy that could displace electricity generated by fossil-fuel-fired power plants. The Proposed PROJECT, along with the proposed Campo, Manzanita, and Jordan wind projects would therefore be consistent with state initiatives aimed at reducing GHG emissions, and impacts would therefore not be adverse. Under CEQA, impacts would be considered less than significant (Class III).

D.18.4 ECO Substation Project Alternatives

Table D.18-7 summarizes the impacts and classifications of impacts under CEQA that have been identified for the ECO Substation Project alternatives.

Table D.18-7
Climate Change Impacts Identified for ECO Substation Project Alternatives

Impact No.	Description	Classification
ECO Substation Alternative Site		
ECO-GHG-1	Project construction would cause a net increase of greenhouse gas emissions.	Class III
ECO-GHG-2	Project operation would cause a net increase of greenhouse gas emissions.	Class III
ECO-GHG-3	Project activities would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Class III
ECO Partial Underground 138 kV Transmission Route Alternative		
ECO-GHG-1	Project construction would cause a net increase of greenhouse gas emissions.	Class III
ECO-GHG-2	Project operation would cause a net increase of greenhouse gas emissions.	Class III
ECO-GHG-3	Project activities would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Class III
ECO Highway 80 138 kV Transmission Route Alternative		
ECO-GHG-1	Project construction would cause a net increase of greenhouse gas emissions.	Class III
ECO-GHG-2	Project operation would cause a net increase of greenhouse gas emissions.	Class III
ECO-GHG-3	Project activities would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Class III
ECO Highway 80 Underground 138 kV Transmission Route Alternative		
ECO-GHG-1	Project construction would cause a net increase of greenhouse gas emissions.	Class III
ECO-GHG-2	Project operation would cause a net increase of greenhouse gas emissions.	Class III
ECO-GHG-3	Project activities would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Class III

D.18.4.1 ECO Substation Alternative Site

Environmental Setting/Affected Environment

Section D.18.1 describes the climate change setting for the proposed ECO Substation Project. Because this alternative would only shift the proposed ECO Substation site 700 feet to the east, the climate change setting would be the same as described in Section D.18.1.

Environmental Impacts/Environmental Effects

Direct and Indirect *(Note: cumulative effects are addressed in Section F of this EIR/EIS)*

Impacts GHG-1 and GHG-2: Impacts GHG-1 and GHG-2 would reflect impact findings previously discussed in Section D.18.3.3 for the proposed ECO Substation Project. As such, construction activities, worker crews, construction schedule, and operational activities would be

the same as the proposed ECO Substation Project. Impacts associated with temporary construction impacts to climate change would not be adverse. Under CEQA, GHG emissions from construction (amortized over 30 years), plus those from operational and maintenance activities, would result in a less-than-significant impact (Class III).

Impact GHG-3: With respect to Impact GHG-3, this alternative would assist in the attainment of the state's goals by facilitating interconnection of renewable sources of energy that could displace electricity generated by fossil-fuel-fired power plants. The alternative would therefore be consistent with state initiatives aimed at reducing GHG emissions, and therefore impacts would not be adverse. Impacts would be considered less than significant under CEQA (Class III).

D.18.4.2 ECO Partial Underground 138 kV Transmission Route Alternative

Environmental Setting/Affected Environment

With the exception of the undergrounding of the proposed 138-kilovolt (kV) transmission line between Milepost (MP) 9 and the rebuilt Boulevard Substation, components of this alternative would be the same as those identified for the ECO Substation Project as presented in Section B of this EIR/EIS. Under this alternative, from MP 9 to the rebuilt Boulevard Substation the proposed 138 kV transmission line would be installed underground (instead of on overhead transmission poles) along the same route as the proposed ECO Substation Project. Since this alternative would follow the same route as the proposed ECO Substation Project, the climate change setting would be the same as that identified in Section D.18.4.1.

Environmental Impacts/Environmental Effects

Direct and Indirect *(Note: cumulative effects are addressed in Section F of this EIR/EIS)*

Impacts GHG-1 and GHG-2: Impacts GHG-1 and GHG-2 would reflect impact findings previously discussed in Section D.18.3.3 for the proposed ECO Substation Project. Construction activities would differ marginally from the proposed ECO Substation Project, as open trenching operations would be required to underground approximately 4.3 miles of the proposed 138 kV transmission line between the Southwest Powerlink (SWPL) and Boulevard Substation, as opposed to constructing the line overhead on transmission line poles. This additional trenching activity and soil disturbance would slightly increase construction-generated GHG emissions when compared to the proposed substation project, resulting primarily from trenching equipment emissions. However, underground activity could reduce some of the use of a helicopter for aboveground transmission line installation. Additional trenching activity could result in increased GHG emissions; however, the impacts would not be adverse. Operational emissions would be the same as those discussed in Section D.18.3.3 and operational impacts would not be adverse. Under CEQA, GHG emissions from construction (amortized over 30 years), plus those

from operational and maintenance activities, would be expected to result in a less-than-significant impact (Class III).

Impact GHG-3: With respect to Impact GHG-3, this alternative would assist in the attainment of the state's goals by facilitating interconnection of renewable energy sources that could displace electricity generated by fossil-fuel-fired power plants. The alternative would therefore be consistent with state initiatives aimed at reducing GHG emissions, and construction-related GHG impacts would be offset by the decrease in overall emissions attributable to electrical generation in California. Identified impacts would not be adverse. Under CEQA, impacts would be considered less than significant (Class III).

D.18.4.3 ECO Highway 80 138 kV Transmission Route Alternative

Environmental Setting/Affected Environment

With the exception of the Old Highway 80 138 kV transmission line route alternative, components of this alternative would be the same as those identified for the proposed ECO Substation Project. From the intersection of the SWPL transmission line and Old Highway 80 (approximately 1.5 miles northwest of Jacumba), this alternative would expand and utilize an existing utility right-of-way (ROW) and overbuild an existing distribution line for approximately 4.8 miles along Old Highway 80 to the rebuilt Boulevard Substation. The climate change setting would remain the same as that discussed in Section D.18.4.1.

Environmental Impacts/Environmental Effects

Direct and Indirect *(Note: cumulative effects are addressed in Section F of this EIR/EIS)*

Impacts GHG-1 and GHG-2: Impacts would reflect impact findings previously discussed in Section D.18.3.3 for the proposed ECO Substation Project. Compared with the proposed ECO Substation site, this alternative would be similar in construction activities, worker crews, construction schedule, and operational activities. Identified impacts would not be adverse. Under CEQA, impacts would be considered less than significant (Class III).

Impact GHG-3: With respect to this impact, the alternative would assist in the attainment of the state's goals by facilitating interconnection of renewable sources of energy that could displace electricity generated by fossil-fuel-fired power plants. The alternative would therefore be consistent with state initiatives aimed at reducing GHG emissions, and impacts would not be adverse. Under CEQA, impacts would be considered less than significant (Class III).

D.18.4.4 ECO Highway 80 Underground 138 kV Transmission Route Alternative

Environmental Setting/Affected Environment

With the exception of the Old Highway 80 underground route alternative, components under this alternative would be the same as those identified for the proposed ECO Substation Project in Section D.18.3.3. From the intersection of the SWPL transmission line and Old Highway 80, this alternative would place the 138 kV transmission line underground adjacent to Old Highway 80 (expanding and utilizing an existing utility ROW) and would follow the roadway north and west to the rebuilt Boulevard Substation.

The climate change setting adjacent to the affected segment of Old Highway 80 associated with this alternative would be the same as that previously identified for the ECO Highway 80 138 kV Transmission Route Alternative in Section D.18.4.3.

Environmental Impacts/Environmental Effects

Direct and Indirect *(Note: cumulative effects are addressed in Section F of this EIR/EIS)*

Impacts GHG-1 and GHG-2: Impacts would reflect impact findings previously discussed in Section D.18.3.3 for the proposed ECO Substation Project. Construction activities would differ marginally from the proposed ECO Substation Project, as open trenching operations would be required to underground approximately 4.8 miles of the proposed 138 kV transmission line adjacent to Old Highway 80, as opposed to constructing the line overhead on transmission line poles. This additional trenching activity would slightly increase construction-generated GHG emissions when compared to the proposed substation project. Operational emissions would be the same as discussed in Section D.18.3.3. Identified impacts would not be adverse. Under CEQA, GHG emissions from construction (amortized over 30 years), plus those from operational and maintenance activities, would be expected to result in a less-than-significant impact (Class III).

Impact GHG 3: With respect to Impact GHG-3, the alternative would assist in the attainment of the state's goals by facilitating interconnection of renewable sources of energy that could displace electricity generated by fossil-fuel-fired power plants. The alternative would therefore be consistent with state initiatives aimed at reducing GHG emissions, and impacts would not be adverse. Under CEQA, impacts would be considered less than significant (Class III).

D.18.5 Tule Wind Project Alternatives

Table D.18-8 summarizes the impacts and classifications of impacts under CEQA that have been identified for the Tule Wind Project alternatives.

Table D.18-8
Climate Change Impacts Identified for Tule Wind Project Alternatives

Impact No.	Description	Classification
Tule Wind Alternative 1, Gen-Tie Route 2 with Collector Substation/O&M Facility on Rough Acres Ranch		
Tule-GHG-1	Project construction would cause a net increase of greenhouse gas emissions.	Class III
Tule-GHG-2	Project operation would cause a net increase of greenhouse gas emissions.	Class III
Tule-GHG-3	Project activities would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Class III
Tule Wind Alternative 2, Gen-Tie Route 2 Underground with Collector Substation/O&M Facility on Rough Acres Ranch		
Tule-GHG-1	Project construction would cause a net increase of greenhouse gas emissions.	Class III
Tule-GHG-2	Project operation would cause a net increase of greenhouse gas emissions.	Class III
Tule-GHG-3	Project activities would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Class III
Tule Wind Alternative 3, Gen-Tie Route 3 with Collector Substation/O&M Facility on Rough Acres Ranch		
Tule-GHG-1	Project construction would cause a net increase of greenhouse gas emissions.	Class III
Tule-GHG-2	Project operation would cause a net increase of greenhouse gas emissions.	Class III
Tule-GHG-3	Project activities would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Class III
Tule Wind Alternative 4, Gen-Tie Route 3 Underground with Collector Substation/O&M Facility on Rough Acres Ranch		
Tule-GHG-1	Project construction would cause a net increase of greenhouse gas emissions.	Class III
Tule-GHG-2	Project operation would cause a net increase of greenhouse gas emissions.	Class III
Tule-GHG-3	Project activities would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Class III
Tule Wind Alternative 5, Reduction in Turbines		
Tule-GHG-1	Project construction would cause a net increase of greenhouse gas emissions.	Class III
Tule-GHG-2	Project operation would cause a net increase of greenhouse gas emissions.	Class III
Tule-GHG-3	Project activities would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Class III

D.18.5.1 Tule Wind Alternative 1, Gen-Tie Route 2 with Collector Substation/O&M Facility on Rough Acres Ranch

Environmental Setting/Affected Environment

Under this alternative, the Tule Wind Project's collector substation and O&M facility would be relocated from land administered by the Bureau of Land Management (BLM) in the McCain National Cooperative Land and Wildlife Management Area to County of San Diego–jurisdictional land on Rough Acres Ranch. Proposed wind turbines would be located in the same location as identified in the proposed Tule Wind Project. The relocation of the collector substation and O&M facility to Rough Acres Ranch would result in a shorter proposed 138 kV transmission line route and a longer overhead cable collector system.

The climate change setting would be the same as that previously identified for the originally proposed Tule Wind Project outlined in Section D.18.1.

Environmental Impacts/Environmental Effects

Direct and Indirect *(Note: cumulative effects are addressed in Section F of this EIR/EIS)*

Impacts GHG-1 and GHG-2: Impacts would reflect impact findings previously discussed in Section D.18.3.3 for the proposed Tule Wind Project. Compared with the proposed Tule Wind Project, this alternative would be similar in construction activities, worker crews, and construction schedule. Identified impacts would not be adverse.

Operational impacts associated with this alternative would be the same. Identified impacts would not be adverse. Under CEQA, GHG emissions from construction (amortized over 30 years), plus those from operational and maintenance activities, would be expected to result in a less-than-significant impact (Class III).

D.18.5.2 Tule Wind Alternative 2, Gen-Tie Route 2 Underground with Collector Substation/O&M Facility on Rough Acres Ranch

Environmental Setting/Affected Environment

Section D.18.5.1 describes the existing climate change setting relevant to climate change associated with the relocation of the collector substation and O&M facility to Rough Acres Ranch, and the subsequent shortened 138 kV transmission line route and extended collector cable system. Because this alternative would only underground the alternate 138 kV transmission line, the existing climate change setting would be the same as that described in Section D.18.5.1.

Environmental Impacts/Environmental Effects

Direct and Indirect *(Note: cumulative effects are addressed in Section F of this EIR/EIS)*

Impacts GHG-1 and GHG-2: Impacts would reflect impact findings previously discussed in Section D.18.3.3 for the proposed Tule Wind Project. During construction, temporary soil disturbance between the relocated collector substation and the rebuilt Boulevard Substation would be greater under this alternative (when compared to the proposed Tule Wind Project) due to open trenching for approximately 4.1 miles along the gen-tie line alignment. Although the 138 kV transmission line associated with this alternative would be shorter in length than that of the overhead gen-tie line associated with the proposed Tule Wind Project, open trenching would be more invasive than excavation for transmission line poles. This additional trenching activity and soil disturbance required to underground the alternative 138 kV transmission line would slightly increase construction-generated GHG emissions when compared to the proposed Tule Wind Project. Identified impacts would not be adverse.

Operational impacts associated with this alternative would be the same. Identified impacts would not be adverse. Under CEQA, GHG emissions from construction (amortized over 30 years), plus those from operational and maintenance activities, would be expected to result in a less-than-significant impact (Class III).

Impact GHG-3: With respect to Impact GHG-3, the alternative would assist in the attainment of the state's goals by utilizing a renewable source of energy that could displace electricity generated by fossilfuel-fired power plants. The alternative would therefore be consistent with state initiatives aimed at reducing GHG emissions, and impacts would not be adverse. Under CEQA, impacts would be considered less than significant (Class III).

D.18.5.3 Tule Wind Alternative 3, Gen-Tie Route 3 with Collector Substation/O&M Facility on Rough Acres Ranch

Environmental Setting/Affected Environment

Under this alternative, the Tule Wind Project's collector substation and O&M facility would be relocated from BLM-administered land in the McCain National Cooperative Land and Wildlife Management Area to County–jurisdictional land on Rough Acres Ranch. Proposed wind turbines would be located in the same location as identified in the proposed Tule Wind Project. The relocation of the collector substation and O&M facility to Rough Acres Ranch would result in a shorter proposed 138 kV transmission line route (approximately 5.4 miles) and a longer overhead cable collector system. The climate change setting would remain the same as that described in Section D.18.5.1.

Environmental Impacts/Environmental Effects

Direct and Indirect *(Note: cumulative effects are addressed in Section F of this EIR/EIS)*

Impacts GHG-1 and GHG-2: Impacts would reflect impact findings previously discussed in Section D.18.3.3 for the proposed Tule Wind Project. Construction of this alternative would temporarily increase exhaust emissions of GHGs along the proposed alternative route as a result of heavy construction equipment and an increased vehicle presence along Ribbonwood Road and Old Highway 80. Identified impacts would not be adverse.

Operational impacts associated with this alternative would be the same. Identified impacts would not be adverse. Under CEQA, GHG emissions from construction (amortized over 30 years), plus those from operational and maintenance activities, would be expected to result in a less-than-significant impact (Class III).

Impact GHG-3: With respect to Impact GHG-3, the alternative would assist in the attainment of the state's goals by utilizing a renewable source of energy that could displace electricity

generated by fossil-fuel-fired power plants. The alternative would therefore be consistent with state initiatives aimed at reducing GHG emissions, and impacts would not be adverse. Under CEQA, impacts would be considered less than significant (Class III).

D.18.5.4 Tule Wind Alternative 4, Gen-Tie Route 3 Underground with Collector Substation/O&M Facility on Rough Acres Ranch

Environmental Setting/Affected Environment

Section D.18.5.3 describes the existing climate change setting associated with the Tule Wind Alternative 3, Gen-Tie Route 3 with Collector Substation/O&M Facility of Rough Acres Ranch. Because this alternative would only underground the 138 kV transmission line, the existing climate change setting would be the same as that described in Section D.18.5.3

Environmental Impacts/Environmental Effects

Direct and Indirect *(Note: cumulative effects are addressed in Section F of this EIR/EIS)*

Impacts GHG-1 and GHG-2: Impacts would reflect impact findings previously discussed in Section D.18.3.3 for the proposed Tule Wind Project. Additional trenching activity and soil disturbance associated with this alternative required to underground the alternative 138 kV transmission line would slightly increase construction-generated GHG emissions when compared to the proposed Tule Wind Project, resulting from trenching equipment emissions. Identified impacts would not be adverse.

Operational impacts associated with this alternative would be the same. Identified impacts would not be adverse. Under CEQA, GHG emissions from construction (amortized over 30 years), plus those from operational and maintenance activities, would be expected to result in a less-than-significant impact (Class III).

Impact GHG-3: With respect to Impact GHG-3, the alternative would assist in the attainment of the state's goals by utilizing a renewable source of energy that could displace electricity generated by fossil-fuel-fired power plants. The alternative would therefore be consistent with state initiatives aimed at reducing GHG emissions, and impacts would not be adverse. Under CEQA, impacts would be considered less than significant (Class III).

D.18.5.5 Tule Wind Alternative 5, Reduction in Turbines

Environmental Setting/Affected Environment

The climate change setting under this alternative would be the same as that described in Section D.18.5.1. This alternative to the proposed Tule Wind Project is the same with the exception that this alternative would remove 62 out of the 134 turbine locations (11 turbines on County

jurisdictional land abutting the BLM In-Ko-Pah Mountains ACEC and 51 turbines adjacent to wilderness areas on the western side of the project site).

Environmental Impacts/Environmental Effects

Direct and Indirect *(Note: cumulative effects are addressed in Section F of this EIR/EIS)*

Impacts GHG-1 and GHG-2: Impacts would reflect impact findings previously discussed in Section D.18.3.3 for the proposed Tule Wind Project. Construction impacts under this alternative would be reduced when compared to the proposed Tule Wind Project. Due to the reduction in wind turbines and resulting reduction in construction of access roads and the length of necessary cable collector system, the construction schedule would likely be shortened as well (the original proposed Tule Wind Project construction schedule is expected to take between 18 and 24 months). Accordingly, this alternative would result in less GHG emissions than the proposed Tule Wind Project. Identified impacts would not be adverse.

Operational impacts associated with this alternative would be the same. Identified impacts would not be adverse. Under CEQA, GHG emissions from construction (amortized over 30 years), plus those from operational and maintenance activities, would be expected to result in a less-than-significant impact (Class III).

Impact GHG-3: With respect to Impact GHG-3, although there is a reduction in turbines, this alternative would assist in the attainment of the state's goals by utilizing a renewable source of energy that could displace electricity generated by fossil-fuel-fired power plants. The alternative would therefore be consistent with state initiatives aimed at reducing GHG emissions, and impacts would not be adverse. Under CEQA, impacts would be considered less than significant (Class III).

D.18.6 ESJ Gen-Tie Project Alternatives

Table D.18-9 summarizes the impacts and classifications of impacts under CEQA that have been identified for the ESJ Gen-Tie Project alternatives.

Table D.18-9
Climate Change Impacts Identified for ESJ Gen-Tie Project Alternatives

Impact No.	Description	Classification
ESJ 230 kV Gen-Tie Underground Alternative		
ESJ-GHG-1	Project construction would cause a net increase of greenhouse gas emissions.	Class III
ESJ-GHG-2	Project operation would cause a net increase of greenhouse gas emissions.	Class III
ESJ-GHG-3	Project activities would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Class III

Table D.18-9 (Continued)

Impact No.	Description	Classification
ESJ Gen-Tie Overhead Alternative Alignment		
ESJ-GHG-1	Project construction would cause a net increase of greenhouse gas emissions.	Class III
ESJ-GHG-2	Project operation would cause a net increase of greenhouse gas emissions.	Class III
ESJ-GHG-3	Project activities would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Class III
ESJ Gen-Tie Underground Alternative Alignment		
ESJ-GHG-1	Project construction would cause a net increase of greenhouse gas emissions.	Class III
ESJ-GHG-2	Project operation would cause a net increase of greenhouse gas emissions.	Class III
ESJ-GHG-3	Project activities would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Class III

D.18.6.1 ESJ 230 kV Gen-Tie Underground Alternative

Environmental Setting/Affected Environment

Section D.18.1 describes the existing climate change setting associated with the ESJ Gen-Tie Project, which considers both a 500 kV gen-tie and a 230 kV gen-tie option. Because this alternative would select and construct the 230 kV transmission line underground within the same project area as the ESJ Gen-Tie Project, the existing climate change setting would be the same as that described in Section D.18.1.

Environmental Impacts/Environmental Effects

Direct and Indirect *(Note: cumulative effects are addressed in Section F of this EIR/EIS)*

Impacts GHG-1 and GHG-2: Impacts would reflect impact findings previously discussed in Section D.18.3.3 for the proposed ESJ Gen-Tie Project. Construction activities would differ marginally from the proposed ESJ Gen-Tie Project, as open trenching operations would be required to underground the 230 kV transmission line along the same route as the proposed ESJ Gen-Tie Project rather than constructing poles and line route overhead. This additional trenching activity would slightly increase construction-generated GHG emissions when compared to the proposed ESJ Gen-Tie Project. Identified impacts would not be adverse. Under CEQA, impacts would be considered less than significant (Class III).

Operational impacts associated with this alternative would be the same. Identified impacts would not be adverse. Under CEQA, GHG emissions from construction (amortized over 30 years), plus those from operational and maintenance activities, would be expected to result in a less-than-significant impact (Class III).

Impact GHG-3: With respect to Impact GHG-3, the alternative would assist in the attainment of the state's goals by utilizing a renewable source of energy that could displace electricity generated by fossil-fuel-fired power plants. The alternative would therefore be consistent with state initiatives aimed at reducing GHG emissions, and impacts would not be adverse. Under CEQA, impacts would be considered less than significant (Class III).

D.18.6.2 ESJ Gen-Tie Overhead Alternative Alignment

This alternative would not affect the impact conclusions resulting from the implementation of the proposed Tule Wind Project as discussed in Section D.18.3.3. This alternative assumes the implementation of the ECO Substation Alternative Site and that the climate change impacts identified in Section D.18.4.1 (ECO Substation Alternative Site) would occur.

Environmental Setting/Affected Environment

Section D.18.1 describes the existing setting associated with the ESJ Gen-Tie Project, which considers both a 500 kV gen-tie and a 230 kV gen-tie option. This alternative would shift the project approximately 700 feet to the east. The existing climate change setting would be the same as that described in Section D.18.1.

Environmental Impacts/Environmental Effects

Direct and Indirect (*Note: cumulative effects are addressed in Section F of this EIR/EIS)*

Impacts GHG-1 and GHG-2: Impacts would reflect impact findings previously discussed in Section D.18.3.3 for the proposed ESJ Gen-Tie Project. Compared with the proposed ESJ Gen-Tie Project, this alternative would be similar in construction activities, worker crews, construction schedule, and operational activities. Identified impacts would not be adverse. Under CEQA, impacts would be considered less than significant (Class III).

Impact GHG-3: With respect to Impact GHG-3, the alternative would assist in the attainment of the state's goals by utilizing a renewable source of energy that could displace electricity generated by fossil-fuel-fired power plants. The alternative would therefore be consistent with state initiatives aimed at reducing GHG emissions, and impacts would not be adverse. Under CEQA, impacts would be considered less than significant (Class III).

D.18.6.3 ESJ Gen-Tie Underground Alternative Alignment

This alternative would not affect the impact conclusions resulting from the implementation of the proposed Tule Wind Project as discussed in Section D.18.3.3. This alternative assumes the implementation of the ECO Substation Alternative Site and that the climate change impacts identified in Section D.18.4.1 (ECO Substation Alternative Site) would occur.

Environmental Setting/Affected Environment

Section D.18.1 describes the existing setting associated with the ESJ Gen-Tie Project, which considers both a 500 kV gen-tie and a 230 kV gen-tie option. This alternative would shift the 230 kV transmission line approximately 700 feet to the east and would underground this alternative alignment. The existing climate change setting would be the same as described in Section D.18.1.

Environmental Impacts/Environmental Effects

Direct and Indirect *(Note: cumulative effects are addressed in Section F of this EIR/EIS)*

Impacts GHG-1 and GHG-2: Impacts would reflect impact findings previously discussed in Section D.18.3.3 for the proposed ESJ Gen-Tie Project. Construction activities would differ marginally from the proposed ESJ Gen-Tie Project, as open trenching operations would be required to underground the 230 kV transmission line along this alternative route rather than constructing poles and line route overhead. This additional trenching activity would slightly increase construction-generated GHG emissions when compared to the proposed ESJ Gen-Tie Project. Identified impacts would not be adverse.

Operational impacts associated with this alternative would be the same. Identified impacts would not be adverse. Under CEQA, GHG emissions from construction (amortized over 30 years), plus those from O&M activities, would be expected to result in a less-than-significant impact (Class III).

Impact GHG-3: With respect to Impact GHG-3, the alternative would assist in the attainment of the state's goals by utilizing a renewable source of energy that could displace electricity generated by fossil-fuel-fired power plants. The alternative would therefore be consistent with state initiatives aimed at reducing GHG emissions, and impacts would not be adverse. Under CEQA, impacts would be considered less than significant (Class III).

D.18.7 No Project/No Action Alternatives

D.18.7.1 No Project Alternative 1 – No ECO Substation, Tule Wind, ESJ Gen-Tie, Campo, Manzanita, or Jordan Wind Energy Projects

Environmental Impacts/Environmental Effects

Impacts GHG-1 through GHG-3: Under the No Project Alternative 1, the ECO Substation, Tule Wind, and ESJ Gen-Tie, as well as the Campo, Manzanita, and Jordan wind energy projects, would not be built and the existing conditions would remain at these sites.

Climate change impacts resulting from the Proposed PROJECT would not occur.

D.18.7.2 No Project Alternative 2 – No ECO Substation Project

Environmental Impacts/Environmental Effects

Impact GHG-1 through GHG-3: Under the No Project Alternative 2, the ECO Substation Project would not be built, and the conditions in the existing energy grid and local environment would remain. None of the construction impacts identified for the ECO Substation Project would occur (refer to Section D.18.3.3 for discussion of impacts associated with the ECO Substation Project). The Tule Wind and ESJ Gen-Tie projects would, however, be constructed and would be forced to interconnect with an existing substation or with a new substation expected to be proposed by SDG&E. Impacts associated with the Tule Wind and ESJ Gen-Tie projects would be expected to be similar to those described in Section D.18.3.3 but could vary depending on the point of interconnection and the resulting gen-tie route and length of the Tule Wind and ESJ Gen-Tie projects. However, if the Tule Wind and ESJ Gen-Tie projects were not built, SDG&E's plans to achieve the state RPS goals would be hampered or delayed, which could conflict with the state's plans under the Scoping Plan.

D.18.7.3 No Project Alternative 3 – No Tule Wind Project

Environmental Impacts/Environmental Effects

Impact GHG-1 through GHG-3: Under the No Project Alternative 3, the Tule Wind Project would not be built and the existing conditions on the project site would remain. Under this alternative, the amount of GHG emissions generated by construction activities would be reduced when compared to the Proposed PROJECT. Additionally, the amount of GHG emissions generated by operational and maintenance activities would be reduced when compared to the Proposed PROJECT with the removal of the Tule Wind Project component. However, if the Tule Wind Project were not built, SDG&E's plans to achieve the state RPS goals would be hampered or delayed, which could conflict with the state's plans under the Scoping Plan.

D.18.7.4 No Project Alternative 4 – No ESJ Gen-Tie Project

Environmental Impacts/Environmental Effects

Impact GHG-1 through GHG-3: Under the No Project Alternative 4, the ESJ Gen-Tie Project would not be built, and the existing conditions on the project site would remain. Construction-related impacts associated with the proposed ECO Substation and Tule Wind projects would occur under this alternative. If the proposed ESJ Gen-Tie Project were not constructed, it is likely that an alternative gen-tie would be constructed. The impacts associated with this gen-tie

would be expected to be similar to those described in Section D.18.3.3 but could vary depending on length of gen-tie line and the location pursued. Under this alternative, the amount of GHG emissions generated by O&M activities would be reduced when compared to the Proposed PROJECT. However, if the ESJ Gen-Tie Project were not built, SDG&E's plans to achieve the state RPS goals would be hampered or delayed, which could conflict with the state's plans under the Scoping Plan.

D.18.8 Mitigation Monitoring, Compliance, and Reporting

As described in Sections D.18.3 through D.18.7, no significant climate change impacts were identified; therefore, mitigation measures are not necessary. Accordingly, no mitigation monitoring, compliance, or reporting is necessary for impacts to climate change.

The proposed Campo, Manzanita, and Jordan wind energy projects would require preparation of a mitigation monitoring, compliance, and reporting program following project-specific environmental review and evaluation under all applicable environmental regulations once sufficient project-level information has been developed.

D.18.9 Residual Effects

Since no adverse or significant impacts were identified in Section D.18 related to climate change, no residual impacts would occur for the Proposed PROJECT or alternatives.

D.18.10 References

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