

4.7 Greenhouse Gases

This section describes the environmental and regulatory settings and discusses impacts associated with construction and operation of the proposed Valley–Ivyglen 115-kilovolt (kV) Subtransmission Line Project (proposed Valley–Ivyglen Project) and the proposed Alberhill System Project (proposed Alberhill Project) with respect to greenhouse gas (GHG) emissions. During scoping for the proposed projects, the California Public Utilities Commission (CPUC) received comments regarding quantification of GHGs from the projects’ expected direct and indirect sources and the availability of guidance for GHG mitigation measures.

4.7.1 Environmental Setting

4.7.1.1 Greenhouse Gases and Climate Change

According to the U.S. Environmental Protection Agency (EPA), *climate change* refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period—decades or longer (EPA 2013). The term is often used interchangeably with the term *global warming*. Climate change or global warming represents an average increase in the temperature of the atmosphere near the Earth’s surface and in the troposphere, which can contribute to changes in global climate patterns. The global distribution of temperature increase is varied; in some locations, average temperatures have decreased. Climate change has been attributed to a variety of causes, including natural and human activities (EPA 2013). Current scientific research indicates that potential effects of climate change include variations in temperature and precipitation, sea-level rise, impacts on biodiversity and habitat, impacts on agriculture and forestry, and human health and social impacts (CNRA 2009). The main GHGs contributing to climate change are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs). These GHGs are described in Table 4.7-1.

Table 4.7-1 Principal Greenhouse Gases Contributing to Climate Change

Greenhouse Gas	Description	Global Warming Potential ^(a)
Carbon dioxide	Generated by natural and human activity. Primary human-induced sources are combustion of fossil fuels, natural gas, and wood.	1
Methane	Primary component of natural gas and produced by natural and human activity. Primary human-induced sources are cattle, decay of material in landfills, and fermentation of organic material such as manure.	25
Nitrous oxide	Produced by human and natural activity. Human-induced sources include manufacturing emissions and fossil fuel combustion.	298
Sulfur hexafluoride	Produced mainly for insulation of electrical equipment, including substation switchgear and circuit breakers.	22,800
Perfluorocarbons	Produced for use as solvents, refrigerants, firefighting agents, and aerosol sprays.	7,390–12,200
Hydrofluorocarbons	Produced for use as solvents, refrigerants, firefighting agents, and aerosol sprays.	124–14,800

Source: CARB 2015a

^(a) Global Warming Potential (GWP) takes into account the length of time the gas remains in the atmosphere and the gas’s unique ability to absorb energy to result in a factor that measures how much a given amount of the GHG is estimated to contribute to global warming over a specific period of time (for example, 100 years) after being emitted, relative to CO₂, which has a GWP of 1. All GWPs used for GHG inventory purposes are considered over a 100-year timeframe. GWPs reported in this table correspond to 100-Year GWPs from the Intergovernmental Panel on Climate Change Fourth Assessment Report (AR4).

1 GHGs allow solar radiation (heat) to pass through the Earth’s atmosphere but prevent heat from escaping,
2 resulting in atmospheric warming. Certain GHGs occur naturally and help balance the Earth’s
3 temperature. Much of the carbon in the atmosphere is absorbed by natural “carbon sinks,” such as forests
4 or ocean kelp. CO₂ is then emitted back into the atmosphere through natural processes such as animal and
5 plant respiration, as well as oceanic and geological processes. These natural processes represent
6 “sources.” When balanced, the amount of CO₂ emitted from sources and absorbed by carbon sinks is
7 roughly equal; this process is known as the “carbon cycle.” Research indicates that, since the advent of
8 the Industrial Revolution, human activity has resulted in an elevation of the concentration of some of
9 these gases in the atmosphere. In particular, concentrations of CO₂ emitted from the burning of fossil
10 fuels have increased significantly. As emission levels rise from human activity such as automobile use,
11 however, carbon sinks are becoming overwhelmed and are unable to sequester the increasing amounts of
12 CO₂. Furthermore, other human activity, such as deforestation, can lead to the reduction of sinks. The
13 resulting increase in GHGs in the atmosphere is now considered one of the key causes of global climate
14 change.

15
16 **4.7.1.2 Emissions Trends**

17
18 Climate change, by its nature, is a cumulative impact resulting from innumerable GHG sources around the
19 world. The California Air Resources Board (CARB) has the primary regulatory responsibility for GHGs
20 within California, and local agencies can also adopt policies for GHG emission reduction. Reported GHG
21 emissions for the state and local jurisdictions are therefore provided in Table 4.7-2.
22

Table 4.7-2 Greenhouse Gas Emission Levels in the Proposed Projects
Area

Jurisdiction (Year)	Reported GHG Emissions (MMTCO _{2e}) ⁽¹⁾	Percentage of State Emissions (%) ⁽²⁾
Riverside County (2008)	7.01	1.5
City of Lake Elsinore (2008)	0.51	0.1
City of Perris (2010)	0.50	0.1
City of Wildomar (2010)	0.18	0.04
City of Menifee (2010)	0.89	0.2
City of Corona (2008)	1.75	0.4
State of California (2008)	477.7	100
State of California (2010)	451.6	100

Sources: CARB 2015b, 2013a, 2010; Riverside County 2015; City of Lake Elsinore 2011a; WRCOG 2014; City of Wildomar 2015; City of Menifee 2013a; City of Corona 2012.

Key:

CO₂ = carbon dioxide

CO_{2e} = carbon dioxide equivalency

GHG = greenhouse gas

GWP = global warming potential

MMTCO_{2e} = million metric tons of carbon dioxide equivalent

Notes:

(1) GHGs in the atmosphere are reported in terms of CO_{2e}. CO_{2e} measures GHGs by multiplying the mass of each GHG emitted by its GWP to determine the equivalent amount of CO₂. For example, one pound of CH₄ is equivalent to 25 pounds of CO_{2e}.

(2) Percentages of State emissions used to calculate percentage are based on state inventory emissions for the corresponding reporting year. Note that, in 2013, California’s total gross GHG emissions were 459.3 MMTCO_{2e} (CARB 2015b), which is within the range of the 2008 and 2010 gross emissions.

1 Statewide, in Riverside County, and in the Cities of Lake Elsinore, Perris, and Wildomar, the
2 transportation sector contributes the most GHG emissions of all sources (CARB 2015b; WRCOG 2014).
3 Notably, the high-GWP gas emissions made up 4 percent of the California inventory in 2013 and consist
4 primarily of substitutes for ozone depleting substances, losses from the electricity grid (SF₆ emissions
5 from electrical switchgears), and gases that are emitted in the semiconductor manufacturing process
6 (CARB 2015b).

8 **4.7.1.3 Potential Effects from Climate Change**

10 ***Temperature and Precipitation***

11 GHGs can remain in the atmosphere for decades; thus, the temperature changes over the next 30 to 40
12 years will largely be determined by past emissions. By 2050, temperatures could increase by an additional
13 1.8 to 5.4 degrees Fahrenheit (CNRA 2009). California would likely continue to have relatively cool, wet
14 winters and dry, hot summers; however, temperature increases could become more severe in summer than
15 winter, and inland areas could experience more pronounced warming than coastal regions. Heat waves
16 could also increase in frequency and intensity. Precipitation patterns are anticipated to change due to
17 increasing temperatures, leading to more rainfall and less snow. This would affect California's drinking
18 water supply, which currently originates mainly as snowmelt runoff. More frequent flood events, due to
19 faster runoff, could also increase stress on state and local infrastructure. Finally, these changes in
20 precipitation could lead to more periods of drought, which could have a negative effect on native
21 ecosystems and on agriculture.

23 ***Sea-level Rise***

24 Recent studies show that sea levels rose by as much as 7 inches during the 20th century and are
25 anticipated to rise up to 55 inches by the end of the century (CNRA 2009). Research shows that sea levels
26 will continue to rise even if emissions are substantially lowered (CNRA 2009). Sea-level rise could have
27 a negative effect on coastal wetlands and marshes through inundation. This would not only negatively
28 impact these specially adapted habitats but could also damage agricultural activities by way of salt water
29 intrusion into fresh water aquifers. Additionally, loss of these habitats as a storm buffer could increase
30 storm-related impacts, such as depleted beaches and property damage.

32 ***Biodiversity and Habitat***

33 Plant and animal species adapted to specific conditions could become threatened as temperatures and
34 precipitation patterns change. These species may have to shift their geographic range to adapt to the
35 changes; however, if the species are unable to adapt, they may face extinction. As the climate shifts,
36 changes in wildfire patterns may also emerge. Many species in California are adapted to regular fire
37 events, but higher temperatures may also result in an increase in the frequency and intensity of fires,
38 which could harm the ability of native plant species to re-germinate between events (CNRA 2009). Shifts
39 in species' ranges could increase the likelihood of habitat fragmentation, and changes in participation
40 could lead to increased periods of drought, making ecosystems vulnerable to colonization by invasive
41 species.

43 ***Agriculture and Forestry***

44 The State of California has some of the most productive agricultural regions in the world. Shifts in
45 climate may impact the ability of certain crops (e.g., grapes, other fruits, and nuts) to produce substantial,
46 high-quality yields. Sea-level rise, changes in growing season length, variation in precipitation, and
47 changes in water supply could affect agricultural productivity, which could impact food supplies.

1 The range of forest lands in the state will also likely shift in response to climate change. Temperature rise
2 has the potential to make current forest ranges inhospitable, expand insect populations that impact tree
3 mortality, and allow for the colonization of invasive, non-native species.

4 5 **Human Health and Social Impacts**

6 Climate change could also result in increased public health risks, including an increase in mortality and
7 morbidity due to heat-related illness and a rise in respiratory illness due to poor air quality caused by
8 higher temperatures. Plant species habitat that shifts due to climate change may also lead to variations in
9 the timing and duration of allergies and the colonization of new habitat by disease vectors such as non-
10 native animals and insects. The elderly, chronically and mentally ill, infants, and the economically
11 disadvantaged will be at greatest risk of experiencing the negative effects of climate-related illness.

12 13 **4.7.2 Regulatory Setting**

14 15 **4.7.2.1 Federal**

16 17 ***Endangerment Finding and Cause or Contribute Finding for Greenhouse Gas***

18 In December 2009, the EPA issued two separate findings regarding GHGs under Section 202(a) of the
19 Clean Air Act:

- 20
21 • The Endangerment Finding states that the current and projected concentrations of the six key
22 GHGs (CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆) in the atmosphere threaten public health and
23 welfare.
- 24 • The Cause or Contribute Finding states that the combined emissions of GHGs from new motor
25 vehicles and new motor vehicle engines contribute to GHG pollution.

26
27 These findings were a foundation for the EPA's regulation of vehicle GHG emissions. The EPA and the
28 U.S. Department of Transportation's National Highway Traffic and Safety Administration (NHTSA) have
29 finalized GHG emission reduction regulations for light-duty vehicles and heavy-duty engines (EPA
30 2015).

31 32 **4.7.2.2 State**

33 34 ***Executive Order S-3-05***

35 Executive Order (EO) S-3-05, issued in 2005, established statewide GHG emission reduction targets of
36 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. This EO
37 recognized the state's susceptibility to climate change impacts.

38 39 ***Assembly Bill 32 and AB 32 Scoping Plan***

40 In 2006, the Global Warming Solutions Act, Assembly Bill (AB) 32, was enacted, requiring a reduction
41 of the state's GHG emissions to 1990 levels by 2020, consistent with EO S-3-05.

42
43 AB 32 requires that CARB prepare and approve a scoping plan for achieving the maximum
44 technologically feasible and cost-effective reductions in GHG emissions from sources or categories of
45 sources of GHGs by 2020 (CARB 2013b). The scoping plan includes a range of GHG emission reduction
46 actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary
47 incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32
48 cost of implementation fee regulation to fund the program. The initial scoping plan was approved at the

1 CARB hearing on December 12, 2008 (CARB 2008). CARB approved the First Update to the Scoping
2 Plan in May 2014. Measures in the Scoping Plan are being adopted over time as regulations.

3
4 Climate Change Scoping Plan GHG reduction measures that are applicable to the proposed projects
5 include the Low Carbon Fuel Standard, regional transportation-related GHG targets, light-duty vehicle
6 GHG standards, medium/heavy-duty vehicle GHG Standards, vehicle efficiency measures, goods
7 movement, energy efficiency, high GWP gases, and recycling and waste. The California legislature has
8 also passed legislation implementing most of the Climate Change Scoping Plan measures. Legislation
9 applicable to the proposed projects is described below.

10 11 ***Executive Order B-30-15***

12 EO B-30-15 was signed by Governor Jerry Brown Jr. on April 29, 2015. This EO established an interim
13 statewide GHG reduction target of 40 percent below 1990 levels by 2030, which is necessary to guide
14 regulatory policy and investments in California in the mid-term and put California on the most cost-
15 effective path for long-term emission reductions. Under this EO, all state agencies with jurisdiction over
16 sources of GHG emissions will need to continue to develop and implement emissions reduction programs
17 to reach the state’s 2050 target and attain a level of emissions necessary to avoid dangerous climate
18 change. According to the Governor’s Office, this EO is in line with the scientifically established levels
19 needed in the United States to limit global warming below 2 degrees Celsius—the warming threshold at
20 which scientists say there will likely be major climate disruptions such as super droughts and rising sea
21 levels (Office of Governor Edmund G. Brown, Jr. 2015).

22 23 ***Assembly Bill 1493 – Pavley***

24 In 2002, the California legislature adopted regulations to reduce GHG emissions in the transportation
25 sector, the State’s largest source of GHG emissions. In September 2004, pursuant to AB 1493, CARB
26 approved regulations to reduce GHG emissions from new motor vehicles beginning with the 2009 model
27 year. In September 2009, CARB adopted amendments to the Pavley regulations to reduce GHG from
28 2009 to 2016. CARB, EPA, and NHTSA have coordinated efforts to develop fuel economy and GHG
29 standards for model 2017-2025 vehicles. The GHG standards are incorporated into the “Low Emission
30 Vehicle” Regulations.

31 32 ***Executive Order S-01-07 – Low Carbon Fuel Standard***

33 In January 2007, the governor set a new standard for transportation fuels sold in California, which sets a
34 reduction of 2.5 percent in the carbon intensity of transportation fuels by 2015 and a reduction of at least
35 10 percent by 2020.

36 37 ***Senate Bill 375 – Sustainable Communities Strategy***

38 In 2008, Senate Bill (SB) 375 was adopted to achieve the GHG reduction targets established in the
39 Climate Change Scoping Plan for the transportation sector through local land use decision that affect
40 travel behavior. In relevant part, SB 375 requires the Air Resources Board to set regional targets for GHG
41 emission reductions from passenger vehicles and light duty trucks. On September 23, 2010, CARB
42 accepted the Southern California Association of Governments—which includes Riverside County—
43 determination that its adopted Sustainable Communities Strategy would meet or exceed the regional GHG
44 emissions reduction goals of 8 percent by 2020 and 13 percent by 2015 (CARB 2012).

45 46 ***Other Mobile Source Reduction Requirements***

47 Several other State provisions address the GHG emissions reduction targets set by CARB for mobile
48 sources. Measures applicable to the proposed projects include the following:

- Advanced Clean Cars Program: a set of regulations that would apply to new vehicles with model years between 2017 and 2025, with a goal of GHG emission reduction of 34 percent in 2025
- Heavy-Duty Truck GHG Regulations: regulations that apply to new heavy duty tractors and trailers to reduce GHG emissions
- On-Road Heavy Duty Diesel Vehicle Regulations: requires diesel trucks and buses to be upgraded to reduce GHG emissions under a phased implementation that would have almost all buses and trucks with 2010 engines by January 1, 2023.

Regulation for Reducing Sulfur Hexafluoride Emissions from Gas-Insulated Equipment

California Code of Regulations (CCR) Title 17, Sections 95350 to 95359, establish requirements for reducing SF₆ emissions from gas-insulated equipment. The provisions of this regulation apply to owners of active switchgear equipment. It specifies maximum allowable annual SF₆ emission rates, SF₆ inventory measurement procedures, recordkeeping requirements, and annual SF₆ reporting requirements. Because SF₆ is the most potent GHG (about 24,000 times the GWP of CO₂), even small gas-insulated devices could be responsible for significant GHG emissions. The maximum allowable annual SF₆ emission rate specified is 1.0 percent of the total gas contained in gas-insulated equipment. This rate must be achieved by 2020 and each calendar year thereafter.

California Green Building Standards

CCR Title 24, Part 11 establishes the requirements to improve health, safety, and general welfare by enhancing the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure throughout the State of California. Section 5.408 of this code establishes mandatory requirements for construction waste reduction, disposal, and recycling for nonresidential building structures. In particular, Section 5.408.1 requires recycling and/or salvaging for reuse a minimum of 50 percent of the nonhazardous construction and demolition waste. In addition, Section 5.408 requires preparation of a construction waste management plan, selection of a waste management company that can provide verifiable documentation, alternatives for waste stream reduction, and requirements for managing excavated soils and land clearing debris.

4.7.2.3 Regional and Local

General Order No. 131-D

The CPUC has sole and exclusive state jurisdiction over the siting and design of the proposed Project. Pursuant to General Order No. 131-D, Section XIV.B, “Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the CPUC’s jurisdiction. However, in locating such projects, the public utilities are directed to consider local regulations and consult with local agencies regarding land use matters.” Consequently, public utilities are directed to consider local regulations and consult with local agencies regarding land use matters.” Consequently, public utilities are directed to consider local regulations and consult with local agencies, but the county and cities’ regulations are not applicable as the county and cities do not have jurisdiction over the proposed Project. Accordingly, a discussion of local land use regulations is provided in the following subsections for informational purposes only.”

South Coast Air Quality Management District Greenhouse Gas Interim Threshold

The South Coast Air Quality Management District (SCAQMD) is the regional agency with primary responsibility for air quality management in the proposed project area. To address GHG regulatory

1 developments, SCAQMD issued *Draft Guidance Document: Interim CEQA Greenhouse Gas Significance*
2 *Threshold* (SCAQMD 2008) and adopted a threshold of 10,000 metric tons of carbon dioxide equivalent
3 (MTCO₂e) for industrial projects (SCAQMD 2011).

4
5 ***Southern California Association of Governments Regional Transportation Plan/***
6 ***Sustainable Communities Strategy***

7 On April 2012, the Southern California Association of Governments (SCAG) Regional Council adopted
8 the final 2012-2035 Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS), which
9 achieves a 9 percent per capita reduction by 2020 and a 16 percent per capita reduction by 2035,
10 compared to a 2005 level (SCAG 2012). On June 2012, CARB issued EO G-12-039, which accepts
11 SCAG's quantification of GHG emission reductions from the adopted 2012 RTP/SCS and the
12 determination that the SCS would, if implemented, achieve the 2020 and 2035 GHG emission reduction
13 targets established by the state pursuant to SB 375. A key element of the 2012 RTP/SCS applicable to the
14 proposed project is transportation demand management, which includes measures that reduce or eliminate
15 peak-period demand on the transportation network, such as encouraging and incentivizing carpooling,
16 telecommuting, vanpooling, and other innovative programs such as "parking pay-out."

17
18 ***Western Riverside Council of Governments Subregional Climate Action Plan***

19 The Western Riverside Council of Governments (WRCOG) published in 2014 the WRCOG Subregional
20 Climate Action Plan (CAP), which sets forth GHG emission reduction targets and measures to
21 demonstrate consistency with AB 32 mandates. Twelve cities in Western Riverside County are
22 participating in this Subregional CAP, including the cities of Perris and Wildomar in the area of the
23 proposed projects. In addition to the implementation of federal, state, and regional GHG emissions
24 reduction measures, the Subregional CAP also proposes the implementation of local measures by major
25 economic sectors: energy, transportation and land use, water, and waste. State, regional, and local
26 measures listed in the plan and applicable to the proposed projects include the following (WRCOG 2014):

- 27
28 • *SR-2 California Building Energy Efficiency Standards (California Code of Regulations Title 24,*
29 *Part 6)*
- 30 • *SR-6 Pavley & Low Carbon Fuel Standard (AB 1493)*
- 31 • *SR-11 Goods Movement*
- 32 • *SR-13 Construction and Demolition Waste Diversion 3*
- 33 • *SR-14 Water Conservation and Efficiency*

34
35 ***County of Riverside General Plan and Climate Action Plan***

36 The Riverside County General Plan (Riverside County 2008) Policy relevant to GHG emission reductions
37 and the proposed projects is:

- 38
39 • ***Policy AQ 5.1:*** *Use source reduction, recycling, and other appropriate measures to reduce the*
40 *amount of solid waste disposal in landfills.*

41
42 Riverside County has released a Draft EIR for its CAP. The CAP had not been adopted at the time of the
43 release of the Notice of Preparation for the proposed projects' EIR and is therefore not discussed further
44 in this section.

1 **City of Lake Elsinore General Plan and Climate Action Plan**

2 The City of Lake Elsinore’s General Plan contains the following goal and policy relevant to GHG
3 emissions and the proposed projects:
4

- 5 • **Goal 14:** *Reduce greenhouse gas emissions from all activities within the City boundaries to*
6 *support the State’s efforts under AB-32 and to mitigate the impact of climate change on the City,*
7 *State, and world*
- 8 • **Policy 14.1:** *By 2020, the City will reduce greenhouse gas emission from within its boundaries to*
9 *1990 levels consistent with AB 32.*

10
11 Lake Elsinore’s CAP (City of Lake Elsinore 2011b) is meant to implement Goal 14 and aims to reduce
12 local GHG emissions. The strategies and measures focus on the construction of new buildings within city
13 limits, but no new building would be constructed within city limits as part of the proposed projects.
14 Measures that apply to recycling would go into effect in 2020, after construction of the proposed projects
15 is completed. Therefore, the CAP is not discussed further in this section.
16

17 **City of Menifee General Plan**

18 The City of Menifee General Plan Open Space and Conservation Element (City of Menifee 2013b)
19 identifies the following policies applicable to GHGs:
20

- 21 • **Policy OCS-10.1:** *Align the city’s local GHG reduction targets to be consistent with the statewide*
22 *GHG reduction target of AB 32.*
- 23 • **Policy OCS-10.2:** *Align the city’s long-term GHG reduction goal consistent with the statewide*
24 *GHG reduction goal of Executive Order S-03-05.*

25
26 **City of Wildomar**

27 At the time of preparation of this document, the City of Wildomar had not adopted a general plan.
28 Wildomar was incorporated in 2008 and adopted all County of Riverside ordinances at that time. County
29 ordinances remain in effect until the City enacts ordinances to supersede them. Policies listed above under
30 the Riverside County General Plan as applicable to the proposed Alberhill Project also apply to the City
31 of Wildomar. No components of the Valley-Ivyglen Project are located within the City of Wildomar.
32

33 **City of Perris**

34 The City of Perris General Plan has several policies related to GHGs and climate change (City of Perris
35 2015). Relevant policies include requirements for drought-resistant planting, gray water use in new
36 development, and use of permeable pavement materials. The components of the proposed Valley–
37 Ivyglen Project located in Perris would not involve landscaping or pavement. Therefore, the City of Perris
38 General Plan is not discussed further in this section.
39

40 **City of Orange**

41 The City of Orange General Plan and Natural Resources Element (City of Orange 2010) identifies the
42 following policies applicable to GHGs:
43

- 44 • **Goal 3.0:** *Prepare for and adapt to the effects of climate change and promote practices that*
45 *decrease the City’s contribution to climate change.*
- 46 • **Policy 3.1:** *Evaluate the potential effects of climate change on the City’s human and natural*
47 *systems and prepare strategies that allow the City to appropriately respond and adapt.*

- *Policy 3.2: Develop and adopt a comprehensive strategy to reduce greenhouse gasses (GHGs) within Orange by at least 15 percent from current levels by 2020.*

United States Forest Service Cleveland National Forest Land Management Plan

The proposed Alberhill Project would involve installation of two new telecommunication antennas at the Santiago Peak Communications Site, which is located within the Cleveland National Forest. The Cleveland National Forest Land Management Plan does not include any policies, goals, or programs related to greenhouse gas emissions (USFS 2005). The Cleveland National Forest Land Management Plan is not discussed further.

4.7.3 Methodology and Significance Criteria

Direct emissions of GHGs generated from equipment/vehicle usage during construction and operation of the proposed projects were estimated from assumptions regarding use of equipment/vehicles and published emission factors. Direct emissions of GHGs due to SF₆ leakage from electrical equipment were estimated based on SF₆ storage capacities in this equipment and conservative leakage rates. Indirect GHG emissions associated with electricity use for the new electrical compressors to be installed were based on anticipated operation of these compressors. In addition, projected decreases in GHGs due to the removal of the existing gas turbine-driven compressors were estimated based on past equipment use, past air testing data, and published emission factors.

Potential impacts on GHG emissions were evaluated according to the following significance criteria. The criteria were defined based on the checklist items presented in Appendix G of the CEQA Guidelines. The proposed projects would cause a significant impact on GHG emissions if they would:

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

Additionally, SCAQMD guidance proposes an interim significance threshold of 10,000 MTCO₂e per year for stationary/industrial projects subject to CEQA review (SCAQMD 2011). A project's construction emissions, amortized over a 30-year period, are added to its annual operational emissions for comparison to this proposed threshold (SCAQMD 2008).

4.7.4 Environmental Impacts and Mitigation Measures (Valley-Ivyglen Project)

4.7.4.1 Project Commitments (Valley-Ivyglen Project)

The applicant has not proposed any project commitments related to reduction of GHGs for the proposed Valley-Ivyglen Project.

1 **4.7.4.2 Impacts Analysis (Valley-Ivyglen Project)**
2

3 **Impact GHG-1 (VIG): Generate GHG emissions, either directly or indirectly, that may have a**
4 **significant impact on the environment**
5 *LESS THAN SIGNIFICANT*
6

7 **Construction**

8 During construction of the proposed Valley-Ivyglen Project, GHGs, primarily CO₂, would be emitted by
9 diesel-fueled and gasoline-fueled construction equipment and on-road vehicles (e.g., delivery trucks,
10 helicopters, and worker vehicles). Approximately 8,445~~342~~ MTCO₂e would be generated by construction
11 activities. Amortized over a 30-year period, construction emissions would be approximately 282~~278~~
12 MTCO₂e per year (Table 4.7-3). Calculations and assumptions are presented in Appendix B.
13

14 GHG emissions from construction would be below the SCAQMD threshold. Impacts would be less than
15 significant.
16

Table 4.7-3 Greenhouse Gas Emissions from Construction of the Proposed Valley-Ivyglen Project

Proposed Valley-Ivyglen Project Component	Greenhouse Gas Emissions (MTCO ₂ e)
115-kV Subtransmission Lines Construction ^a	8,054
Telecommunications ^b	391
Total emissions	8,445
Amortized (30-year period)	282
CPUC-Applied SCAQMD Threshold	10,000
Exceeds Threshold (Yes/No)	No

Sources: SCE 2015

Key:

CPUC = California Public Utilities Commission

kV = kilovolt

LWS = lightweight steel

MTCO₂e = metric tons of carbon dioxide equivalent

ROW = right-of-way

SCAQMD = South Coast Air Quality Management District

TSP = tubular steel pole

Notes:

^(a) 115-kV subtransmission line construction includes the following activities: survey, laydown yard operation, ROW clearing, roads & landing work, guard structure installation, install TSP foundations, TSP haul, TSP assembly, TSP erection, LWS pole haul, LWS pole assembly, install LWS pole, install conductor, guard structure removal, restoration, remove conductor and ground wire, LWS pole removal, vault installation, duct bank installation, install underground cable, underground distribution, retaining walls, and blasting.

^(b) Telecommunications construction includes the following activities required for fiber optic cable installation: overhead installation, underground installation, duct bank installation, manhole installation, and distribution relocation.

17
18 **Operation and Maintenance**

19 Ongoing operation of the proposed Valley-Ivyglen Project would result in GHG emissions associated
20 with periodic maintenance/inspection. As shown in Table 4.7-4, annual emissions from maintenance and
21 inspection activities would be estimated at 11 MTCO₂e. GHG emissions from unforeseen emergency
22 repairs are not included in these estimates but would be far below the 10,000-metric-ton threshold. GHG
23 emissions calculations are presented in Appendix B.
24

Table 4.7-4 Estimated Annual Greenhouse Gas Emissions from the Proposed Valley-Ivyglen Project Operations

Emission Type	Greenhouse Gas Emissions (MTCO ₂ e)
Annual Operations Emissions (Maintenance/Inspection Vehicle)	11
Amortized Construction Emissions (30-year period)	282
Total Annualized Emissions (Construction and Operations)	293
CPUC-Applied SCAQMD Threshold	10,000
Exceeds Threshold (Yes/No)	No

Source: CPUC 2009; SCE 2014; SCAQMD 2007

Key:

MTCO₂E = metric tons carbon dioxide equivalent

GHG emissions from operation and maintenance would be below the SCAQMD threshold. Impacts would be less than significant.

Impact GHG-2 (VIG): Conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emission of GHGs
NO IMPACT

Project construction and operation would result in emissions covered by several relevant, plans, policies, and regulations. Table 4.7-5 contains an analysis of conformity with those plans, policies, and regulations.

Table 4.7-5 Valley-Ivyglen Project Conformity with Plans, Policies, and Regulations

Plan, Policy, or Regulation	Consistency Analysis
Federal vehicle emissions standards	The project would be subject to federal vehicle regulations and would therefore utilize vehicles that comply with federal vehicle emissions standards.
AB 32	The project would be subject to and comply with policies and measures in the AB 32 Scoping Plan that have been and will be implemented as regulations.
AB 1493—Pavley	The project would be subject to state vehicle regulations and would therefore utilize vehicles that comply with state vehicle emissions standards.
EO S-01-07—Low Carbon Fuel Standard	Fuels purchased for the project would be required to comply with the Low Carbon Fuel Standard.
Advanced Clean Cars Program	Vehicles with a model year from 2017 to 2025 purchased for the proposed project would comply with regulations in the Advanced Clean Cars Program.
Heavy Duty Truck GHG Regulations	The project would be subject to heavy duty truck and trailer regulations and would therefore utilize heavy duty truck and trailers that comply with state regulations.
On-Road Heavy Duty Diesel Vehicle Regulations	The project would be subject to heavy duty truck and trailer regulations and would therefore utilize heavy duty truck and trailers that comply with state regulations.
SCAG Regional Transportation Plan/Sustainable Communities Strategy	The applicant has not proposed to have its workers participate in any transportation demand management programs such as carpooling or ridesharing. However, the applicable policy from the strategy only aims to encourage such behavior. The proposed project would therefore not be inconsistent with this plan.
Western Riverside Council of Governments Subregional Climate Action Plan	The project would be consistent with AB 1493, as previously discussed in this table, and would therefore be consistent with Measure SR-6. In addition, the project would be subject to and comply with policies and measures included in the regional SCS/RTP and the South Coast Air Quality Management Plan for the use of low emission trucks consistent with state legislation. Therefore, the project would be consistent with Measure SR-11 of this plan. During construction of the proposed Valley-Ivyglen Project, approximately 5636 million gallons of water would be required. The project would obtain water from an local water agency subject to the local jurisdiction's per-capita water use in compliance with the SB X7-7 requirements.

	Therefore, the project is consistent with Measure SR-14 of this plan.
County of Riverside General Plan Policy AQ 5.1	A portion of project waste would be recycled or salvaged. The proposed Valley-Ivyglen Project would generate approximately 40 tons of solid waste during construction that would either be recycled or salvaged. Therefore, the proposed project would be consistent with this policy.
City of Menifee General Plan Policy OCS-10.1	Since the proposed project would be consistent with AB 32, as described in this table, it would also be consistent with this policy.
City of Menifee General Plan Policy OCS-10.2	Since the proposed project would be consistent with EO S-03-05, as described in this table, it would also be consistent with this policy.

Key:

AB = Assembly Bill

EO = Executive Order

RTP = Regional Transportation Plan

SCS = Sustainable Communities Strategy

As demonstrated in Table 4.7-5, the proposed Valley-Ivyglen Project would be consistent with all applicable plans, policies, and regulations. There would be no impact.

4.7.5 Environmental Impacts and Mitigation Measures (Alberhill Project)

4.7.5.1 Project Commitments (Alberhill Project)

The applicant has not proposed any project commitments related to reduction of GHGs for the proposed Alberhill Project.

4.7.5.2 Impacts Analysis (Alberhill Project)

Impact GHG-1 (ASP): Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment
LESS THAN SIGNIFICANT

Construction

During construction of the proposed Alberhill Project, GHGs, primarily CO₂, would be emitted from engine exhaust of diesel- and gasoline-fueled construction equipment and on-road vehicles (e.g., delivery trucks, helicopters, and worker vehicles). Construction of the proposed substation would involve one of two soil import options: importing soil from a 5.2-acre source area located adjacent to the northeastern side of the proposed Alberhill Substation site (Import Soil Option 1) or trucking in soil from a local quarry located approximately 32 miles from the proposed substation site (Import Soil Option 2). Refer to Section 2.4.4.2, “Fill, Grading, Drainage, and Surface Materials,” for further details.

Emissions are detailed in Table 4.7-6. Based on the proposed construction equipment and vehicle use, it is estimated that approximately 5,116,422 MTCO₂e would be generated from all project construction activities under Import Soil Option 1 using the conventional method for 500-kV transmission line construction, and total GHG emissions would increase by 4 percent (5,330 MTCO₂e) if the helicopter construction method is used. The increased emissions would be due to greater helicopter use under the helicopter construction method when compared to the conventional method. Approximately 5,122,446 MTCO₂e would be generated under Import Soil Option 2 using the conventional construction method for 500-kV transmission line construction, with a similar 4 percent increase in total GHG emissions if the helicopter construction method is used. Refer to Section 2.4.5.5, “500-kV Tower Construction (Alberhill Project),” for a description of the different options for 500-kV construction. Refer to Section 2.4.6.2, “Fill, Grading, Drainage, and Surface Materials,” for a discussion of the two import soil options.

Table 4.7-6 Estimated Greenhouse Gas Emissions from Construction of the Proposed Alberhill Project

Proposed Alberhill Project Component	Construction GHG Emissions (MTCO ₂ e)			
	Conventional Method		Helicopter Construction	
	Import Soil Option 1	Import Soil Option 2	Import Soil Option 1	Import Soil Option 2
Substation site demolition	284	284	284	284
Substation site water line relocation	12	12	12	12
Alberhill Substation	1,675	1,670	1,675	1,670
500-kV Transmission Lines	1,330	1,330	1,461	1,461
115-kV Subtransmission Lines	1,714	1,714	1,791	1,791
Telecommunications	107	107	107	107
Total emissions	5,116,422	5,122,116	5,325,330	5,330,325
Amortized (30-year period)	171	171	178	178
CPUC-Applied SCAQMD Threshold	10,000	10,000	10,000	10,000
Exceeds Threshold (Yes/No)	No	No	No	No

Source: SCE 2015

Key:

CPUC = California Public Utilities Commission

GHG = greenhouse gas

kV = kilovolt

MTCO₂e = metric tons of carbon dioxide equivalent

SCAQMD = South Coast Air Quality Management District

1
2 Amortized over 30 years, construction emissions are estimated to be up to 178 MTCO₂e per year under
3 either construction method and either import soil option (Table 4.7-6). Calculations and assumptions are
4 presented in Appendix B.

5
6 GHG emissions from construction would be below the SCAQMD threshold. Impacts would be less than
7 significant.

8
9 **Operation and Maintenance**

10 GHG emissions would be generated during maintenance and inspection of proposed Alberhill Project
11 components. Maintenance vehicles would emit CO₂ and CH₄, but the majority of GHG emissions (in
12 terms of CO₂e) would be from SF₆ leaks from electrical equipment. Fugitive emissions of SF₆ would be
13 emitted from gas-insulated equipment at the Alberhill Substation. The 500-kV gas-insulated switchrack
14 proposed to be installed at the substation would contain up to 50,000 pounds of SF₆. In addition, circuit
15 breakers to be installed on the proposed 115-kV switchrack at the same site would contain up to 15,000
16 pounds of SF₆ (SCE 2011). Table 4.7-7 shows estimated emissions during operation. GHG emissions
17 calculations are presented in Appendix B. Annual GHG emissions from operational activities are
18 estimated to be approximately 3,371 MTCO₂e. When combined with amortized construction GHG
19 emissions, the total is estimated to be between 3,542 and 3,549 MTCO₂e, depending on the 500-kV
20 transmission line construction technique to be used (Table 4.7-7). GHG emissions from unforeseen
21 emergency repairs are not included in these estimates but would be far below the 10,000-metric-ton
22 threshold.

23

Table 4.7-7 Estimated Greenhouse Gas Emissions from Operation of the Proposed Alberhill Project

Emission Source	Annual GHG Emissions (MTCO ₂ e/year)
Emergency Diesel Generator	8
Motor Vehicle Use ¹	2
SF ₆ Leakage ²	3,361
<i>Total - Operations</i>	<i>3,371</i>
Amortized Construction Emissions (30-year period) ³	171 to 178
Total Annualized Emissions (Construction and Operations)	3,542 to 3,549
CPUC-Applied SCAQMD Threshold	10,000
Exceeds Threshold (Yes/No)	No

Source: SCE 2011

Key:

CO₂ = carbon dioxide

CO₂e = carbon dioxide equivalent

CPUC = California Public Utilities Commission

GWP = global warming potential

lbs = pounds

MTCO₂e = metric tons of carbon dioxide equivalent

SCAMD = South Coast Air Management District

SF₆ = sulfur hexafluoride

VMT = vehicle miles traveled

Notes:

- ¹ Direct emissions of CO₂ estimated based on VMT per day and 1.1lbs CO₂/mile. Assumptions: 65 VMT/day for transmission line inspection, 62 VMT/day for subtransmission line inspection, and 60 VMT/day for substation maintenance.
- ² The applicant would install new gas-insulated equipment certified by the manufacturer to have SF₆ leak rates of 0.5% or less per year. Direct emissions of SF₆ are therefore estimated by assuming 0.5% leak rate from equipment storing 65,000 lbs of SF₆, which would equal 325 lbs of SF₆/year, or 3,361 MTCO₂e/year (using a GWP of 22,800, per Table 4.7-1).
- ³ Amortized emissions account for use of either soil import option and either conventional method or helicopter construction method for 500-kV transmission line construction.

1
2 Greenhouse gas emissions from construction would be below the SCAQMD threshold. Impacts would be
3 less than significant.

4
5 **Impact GHG-2 (ASP): Conflict with any applicable plan, policy or regulation adopted for the**
6 **purpose of reducing the emission of GHGs.**
7 **NO IMPACT**

8
9 Project construction and operation would result in emissions covered by several relevant, plans, policies,
10 and regulations. Table 4.7-8 contains an analysis of conformity with those plans, policies, and
11 regulations.

12 Table 4.7-8 Alberhill Project Conformity with Plans, Policies, and Regulations

Plan, Policy, or Regulation	Consistency Analysis
Federal vehicle emissions standards	The project would be subject to federal vehicle regulations and would therefore utilize vehicles that comply with federal vehicle emissions standards.
AB 32	The project would be subject to and comply with policies and measures in the AB 32 Scoping Plan that have been and will be implemented as regulations.
AB 1493—Pavley	The project would be subject to state vehicle regulations and would therefore utilize vehicles that comply with state vehicle emissions standards.
EO S-01-07—Low Carbon Fuel Standard	Fuels purchased for the project would be required to comply with the Low Carbon Fuel Standard.
Advanced Clean Cars Program	Vehicles with a model year from 2017 to 2025 purchased for the proposed project would comply with regulations in the Advanced Clean Cars Program.

Table 4.7-8 Alberhill Project Conformity with Plans, Policies, and Regulations

Plan, Policy, or Regulation	Consistency Analysis
Heavy Duty Truck GHG Regulations	The project would be subject to heavy duty truck and trailer regulations and would therefore utilize heavy duty truck and trailers that comply with state regulations.
On-Road Heavy Duty Diesel Vehicle Regulations	The project would be subject to heavy duty truck and trailer regulations and would therefore utilize heavy duty truck and trailers that comply with state regulations.
State regulations for reducing SF ₆ emissions from gas insulated switchgear (17 CCR Sections 95350 to 95359).	By 2020, the maximum emission requirement would be 1 percent per year for all gas-insulated equipment; the applicant would only purchase and install gas-insulated equipment with a manufacturer's certified SF ₆ leak rate of 0.5 percent per year or less, and implement SF ₆ best management practices during operation and maintenance of the proposed Alberhill Project. The applicant currently complies with the maximum annual SF ₆ emission rate requirements established by 17 CCR 95352.
SCAG Regional Transportation Plan/Sustainable Communities Strategy	The applicant has not proposed to have its workers participate in any transportation demand management programs such as carpooling or ridesharing. However, the applicable policy from the strategy only aims to encourage such behavior. The proposed project would therefore not be inconsistent with this plan.
Western Riverside Council of Governments Subregional Climate Action Plan	<p>The project would be consistent with AB 1493, as previously discussed in this table, and would therefore be consistent with Measure SR-6. In addition, the project would be subject to and comply with policies and measures included in the regional SCS/RTP and AQMP for the use of low emission trucks consistent with state legislation. Therefore, the project would be consistent with Measure SR-11 of this plan.</p> <p>Measure SR-13 requires compliance with the mandatory requirement to divert 50 percent of construction and demolition waste from the landfill waste stream. The applicant would be required to comply with applicable waste reduction standards for covered buildings on the Alberhill Substation site. The Alberhill Project would be constructed in compliance with the California Building Standards Code, Title 24, CCR, which requires a minimum of 50 percent of non-hazardous construction and demolition waste and implementation of a construction waste management plan (Part 11, Section 5.408). Therefore, the project would be consistent with Measure SR-13 of this plan.</p> <p>The applicant has indicated approximately 40 tons of solid waste would be either recycled or salvaged, which represents approximately 0.03 percent of the total construction waste that would be generated (142,070 tons). However, the actual percentage of recyclable waste from building construction is unknown. Therefore, the project has the potential to be inconsistent with Measure SR-13.</p> <p>Construction of the Alberhill Project would require approximately 5539 million gallons of water. Operation of the project would require approximately 3,000 gallons per year. The project would obtain water from local water agency subject to the local jurisdiction's per-capita water use in compliance with the SB X7-7 requirements. Therefore, the project would not be inconsistent with this Measure SR-14 of this plan</p>
County of Riverside General Plan Policy AQ 5.1	A portion of project waste would be recycled or salvaged. The proposed Alberhill Project would generate approximately 40 tons of solid waste during construction that would either be recycled or salvaged. Therefore, the proposed project would be consistent with this policy.
City of Menifee General Plan Policy OCS-10.1	Since the proposed project would be consistent with AB 32, as described in this table, it would also be consistent with this policy.

Table 4.7-8 Alberhill Project Conformity with Plans, Policies, and Regulations

Plan, Policy, or Regulation	Consistency Analysis
City of Menifee General Plan Policy OCS-10.2	Since the proposed project would be consistent with Executive Order S-03-05, as described in this table, it would also be consistent with this policy.

Key:

- AB = Assembly Bill
- AQMP = Air Quality Management Plan
- CCR = California Code of Regulations
- EO = Executive Order
- GHG = greenhouse gas
- RTP = Regional Transportation Plan
- SB = Senate Bill
- SCAG = Southern California Association of Governments
- SCS = Sustainable Communities Strategy

As demonstrated in Table 4.7-8, the proposed Alberhill System Project would be consistent with all applicable plans, policies, and regulations. There would be no impact.

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