4.14 GREENHOUSE GASES

This section presents the environmental setting and impact analysis for greenhouse gases (GHGs) and climate change that would occur as a result of the Proposed Project and its alternatives. This section addresses the current baseline conditions in the Proposed Project area and region, applicable regulations, environmental impacts, and mitigation measures to reduce or avoid significant impacts. Appendix J presents emission calculations and assumptions spreadsheets supporting the GHG analysis in this section.

4.14.1 Approach to Data Collection

GHGs were evaluated by reviewing the following data sources:

- CARB's First Update to the Climate Change Scoping Plan: Building on the framework Pursuant to AB 32, The California Global Warming Solutions Act of 2006 (CARB 2014b)
- SCAQMD's Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans (SCAQMD 2008)
- SDG&E's SXPQ ED07-SDGE Response—Q 1-10 (SDG&E 2015a)
- SDG&E's SXPQ ED13-SDGE Response—Questions 1-18 (SDG&E 2015b)

4.14.2 Environmental Setting

4.14.2.1 Greenhouse Gases and Climate Change

GHGs are of global concern because they cause global climate change. GHGs contribute to climate change by "absorb[ing] and re-emit[ting] most of the energy that radiates upward from the Earth's surface, adding the heat back to the lower atmosphere and warming the Earth's surface" (EPA 2012a). Scientific research indicates that observed global climate change is very likely a result of increased GHG emissions associated with industrial-era human activities. The principal GHGs contributing to global climate change are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated compounds, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6) (U.S. Energy Information Administration 2014). Fossil fuel combustion is the main source of CO_2 emissions. Fossil-based fuel production, agriculture, and landfills emit CH_4. Agricultural activities, industrial activities, fossil fuel combustion, and solid waste combustion produce N_2O. Industrial processes and various household and commercial uses emit fluorinated compounds (EPA 2012a). SF_6 is a fluorinated gas commonly used in the utility industry as an insulating gas in circuit breakers and other electronic equipment.

Global climate change results in several effects. Effects include increased temperatures; changes in snow and rainfall patterns; and an increase in droughts, tropical storms, and heavy rain events. These effects have positive and negative ramifications. Warmer temperatures may reduce demand for heating and may result in favorable conditions for certain crops. Conversely, increased temperatures can be disadvantageous for vulnerable populations and can

damage certain crops. Precipitation can increase water supplies, but concentrated precipitation can cause death and infrastructure damage (EPA 2012a).

4.14.2.2 Existing Greenhouse Gas Emissions – Statewide

In 2014, CARB developed the statewide GHG emission inventory for 2000 through 2012 (CARB 2014a). This inventory includes emission estimates for CO_2, N_2O, SF_6, nitrogen trifluoride (NF_3), HFCs, and PFCs (CARB 2014a).

The global warming potential (GWP) for each GHG was used in the statewide inventory. Each GHG has an estimated global warming potential, which is a function of its atmospheric lifetime and its ability to absorb and radiate infrared energy emitted from the Earth's surface. The GWP provides a comparison of the warming influence of different GHGs relative to CO_2 (the predominant GHG), which allows for the calculation of a single, consistent GHG emission unit: the carbon dioxide equivalent (CO_2e) (IPCC 2007). Table 4.14-1 presents the global warming potential and atmospheric lifetimes of common GHGs.

Table 4.14-1 Global Warming Potentials of Common Greenhouse Gases

GHG	100-Year Global Warming Potential	Atmospheric Lifetime (Years)
CO_2	1	Variable
CH_4	28	12.4
N_2O	265	121
SF_6	23,500	3,200

Source: IPCC 2013

According to CARB, total gross California GHG emissions in 2012 were 458.68 million metric tons of CO_2e ($MMTCO_2e$). Table 4.14-2 shows the statewide GHG emissions estimated by CARB since 2005.

Table 4.14-2 California Greenhouse Gas Inventory for 2005-2012

	Greenhouse Gas Emissions (MMTCO2e)							
	2005	2006	2007	2008	2009	2010	2011	2012
Transportation	189.08	189.18	189.27	178.02	171.47	170.46	168.13	167.38
Electric Power	107.86	104.54	113.94	120.15	101.32	90.30	88.04	95.09
Commercial and Residential	41.24	41.89	42.11	42.44	42.65	43.82	44.32	42.28
Industrial	92.29	90.28	87.10	87.54	84.95	88.51	88.34	89.16
Recycling and Waste	7.75	7.80	7.93	8.09	8.23	8.34	8.42	8.49
High GWP	10.36	11.08	11.78	12.87	13.99	15.89	17.35	18.41
Agriculture	36.54	37.75	37.03	37.99	35.84	35.73	36.34	37.86
TOTAL	**485.13**	**482.52**	**489.16**	**487.10**	**458.44**	**453.06**	**450.94**	**458.68**

Source: CARB 2014a

4.14.2.3 Existing Greenhouse Gas Emissions – San Diego County

The Energy Policy Initiatives Center (EPIC) of the University of San Diego prepared regional GHG inventories to examine specific emissions sources and levels in San Diego County (2013). Table 4.14-3 shows the San Diego County GHG Inventory and Emissions Projections prepared by EPIC. As shown in the table, the total GHG emissions in 2010 were estimated to be 33 $MMTCO_2e$.

4.14.3 Applicable Regulations, Plans, and Standards

4.14.3.1 International Actions

The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 by the World Meteorological Organization and the United Nations Environment Program to provide world governments with a clear scientific view of changes to the world's climate. IPCC reviews and assesses the most recent scientific, technical, and socioeconomic information produced worldwide relevant to the understanding of climate change.

Table 4.14-3 San Diego County Greenhouse Gas Inventory and Emissions Projections

	Greenhouse Gas Emissions ($MMTCO_2e$)									
	1990	1995	2000	2005	2010	2015	2020	2025	2030	2035
On-Road Transportation	14.3	13.3	13.9	15.9	14.4	15.0	15.7	16.8	18.0	18.3
Electricity	6.8	7.5	8.5	7.7	8.3	8.9	9.5	10.0	10.6	11.2
Natural Gas End Uses	3.0	2.8	3.1	2.9	2.9	3.1	3.3	3.5	3.7	3.9
Off-Road Equipment and Vehicles	1.0	1.0	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
Civil Aviation	1.2	1.4	1.6	1.8	1.9	2.0	2.1	2.2	2.4	2.5
Waste	0.9	1.1	0.4	0.4	0.6	0.7	0.7	0.9	1.0	1.1
Industrial Processes and Products	0.5	0.7	1.6	1.9	1.8	1.9	1.9	2.0	2.1	2.12
Water-Borne Navigation	0.04	0.06	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3
Rail	0.21	0.22	0.17	0.32	0.32	0.39	0.47	0.54	0.61	0.68
Other Fuels/Other	1.83	1.54	1.41	1.56	1.58	1.63	1.71	1.80	1.88	1.97
Agriculture	0.15	0.12	0.09	0.07	0.05	0.04	0.03	0.02	0.02	0.01
Land Use Wildfires	0.18	0.59	0.23	0.28	0.28	0.28	0.28	0.28	0.28	0.28
Development (Loss of Vegetation)	0.06	0.06	0.19	0.20	0.18	0.18	0.18	0.18	0.18	0.18
Sequestration from Land Cover	(0.68)	(0.68)	(0.68)	(0.67)	(0.66)	(0.66)	(0.65)	(0.65)	(0.64)	(0.63)
TOTAL	**29.5**	**29.7**	**31.8**	**33.8**	**33.2**	**35.2**	**37.0**	**39.5**	**42.1**	**3.8**

Source: EPIC 2013

In 1992, countries joined an international treaty, the United Nations Framework Convention on Climate Change (UNFCCC), to consider what actions they could cooperatively perform to limit average global temperature increases and the resulting climate change (UNFCCC 2014). By 1995, countries realized that emission reductions provisions in the UNFCCC were inadequate. In response, they launched negotiations to strengthen the global response to climate change and adopted the Kyoto Protocol, an international agreement, in Kyoto, Japan on December 11, 1997. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions. While the UNFCCC treaty encourages industrialized countries to stabilize GHG emissions, the Kyoto Protocol commits them to do so (UNFCCC 2014).

4.14.3.2 Federal

Massachusetts v. U.S. Environmental Protection Agency

On April 2, 2007, the Supreme Court found in *Massachusetts v. EPA* that GHGs are air pollutants under the CAA. The EPA, therefore, has the authority to regulate GHG emissions. The Supreme Court found that the CAA authorizes EPA to regulate tailpipe GHG emissions if EPA determines they cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare (EPA 2014).

U.S. Environmental Protection Agency

Final Rule on Mandatory Reporting of GHGs

In 2009, EPA established the Final Rule on Mandatory Reporting of Greenhouse Gases, which requires reporting of GHG emissions from large sources and suppliers in the U.S. In general, the rule is referred to as 40 CFR Part 98. 40 CFR Part 98 is intended to collect accurate and timely emissions data to inform future policy decisions. Facilities that emit 25,000 metric tons of CO_2e ($MTCO_2e$) or more per year are required to submit annual reports to EPA.

Clean Air Act

On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- **Endangerment Finding:** The current and projected concentrations of the six key well-mixed 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.
- **Cause or Contribute Finding:** The combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

These findings do not themselves impose any requirements on industry or other entities. This action, however, is a prerequisite for implementing GHG emissions standards for vehicles.

Light-Duty Vehicle Standards

In collaboration with the National Highway Traffic Safety Administration (NHTSA), EPA finalized the program to reduce GHG emissions and improve fuel economy for light-duty vehicles (model years [MY] 2012-2016) in May 2010. The program was extended in 2012 to set

more stringent standards for MY 2017-2025 light-duty vehicles. The revised standards are projected to reduce GHGs by approximately 2 billion metric tons and save 4 billion barrels of oil over the lifetime of MY 2017-2025 vehicles (EPA 2012b). Standards include fuel economy targets and improvements in vehicle technologies including improved vehicle aerodynamics, reduced vehicle weight, lower tire rolling resistance, and expanded production of electric and hybrid vehicles.

Heavy-Duty Truck and Bus Standards

In August 2011, EPA and NHTSA announced the first-ever program to reduce GHG emissions and improve the fuel efficiency of heavy-duty trucks and buses. The final combined standards of the program will reduce CO_2 emissions by about 270 million metric tons and save about 530 million barrels of oil over the life of MY 2014-2018 heavy-duty vehicles (EPA 2011). The heavy-duty sector addressed in the EPA and NHTSA rules (including the largest pickup trucks and vans, semi-trucks, and all types and sizes of work trucks and buses in between) accounts for nearly 6 percent of total GHG emissions in the United States and 20 percent of transportation emissions. The program includes standards for fuel consumption and emissions for combination tractors and vocational vehicles, N_2O and CH_4 emissions standards applicable to all heavy-duty engines, pick-ups, and vans, and standards for leakage of HFC refrigerants from air conditioning systems.

4.14.3.3 State

Executive Order S-3-05

Executive Order S-3-05, signed in June 2005 by Governor Arnold Schwarzenegger, states that California is vulnerable to the impacts of climate change and that increased temperatures could reduce the Sierra snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To address those concerns, the Executive Order established the state's first GHG emissions targets:

- Reduce GHG emissions to 2000 levels by 2010;
- Reduce GHG emissions to 1990 levels by 2020; and
- Reduce GHG emissions to 80 percent below 1990 levels by 2050.

This Executive Order requires biannual reports on progress made toward meeting these targets and the global warming impact on California.

Global Warming Solutions Act of 2006 (Assembly Bill 32)

In September 2006, the state legislature passed, and Governor Schwarzenegger signed, AB 32 (Chapter 488, States of 2006), the Global Warming Solutions Act of 2006, which set the 2020 GHG emissions reduction goal into law. It directed CARB to begin developing discrete early actions to reduce GHG emissions while also preparing the Climate Change Scoping Plan, which outlines a framework of measures that would eventually be adopted and implemented to reach AB 32 goals (CARB 2014b). CARB approved the Climate Change Scoping Plan in 2008 and updated it in May 2014. Regulations are being phased in over time. Adopted regulations include the 33 percent Renewable Portfolio Standard, the Cap-and-Trade Program, and the Low

Carbon Fuel Standard. Relevant recommended actions of the updated Climate Change Scoping Plan are generally related to transportation/goods movement and gases with a high GWP. These actions are listed in Table 4.14-4.

Table 4.14-4 Climate Change Scoping Plan Actions

Action	Expected Completion Date
Propose "Phase 2" heavy-duty truck GHG standard standards (CARB)	2016
Begin compliance actions for working toward the elimination of disposal of organic waste in landfills if the legislature does not act in 2014 (CalRecycle, CARB)	2016
Continue diesel controls that will reduce black carbon emissions by 95 percent from the late 1960s to 2020 (CARB)	2020
Reduce emissions of smog-forming pollutants by about 90 percent below 2010 levels by 2032 to meet the National Ambient Air Quality Standards (NAAQS) for O_3 (CARB)	2032

Source: CARB 2014b

Reporting of GHG emissions by major sources is required by AB 32. In 2007, CARB established the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions. Revisions to this GHG reporting regulation were approved by the California Office of Administrative Law, which became effective on January 1, 2012. Facilities that emit 10,000 $MTCO_2e$ or more of GHG emissions per year are required to submit annual reports to CARB.

Executive Order B-30-15

In April 2015, Governor Brown signed Executive Order B-30-15, establishing a new interim statewide GHG emission reduction target of 40 percent below 1990 levels by 2030. The interim reduction target was established in order to ensure California meets its goal of reducing GHG emissions to 80 percent below 1990 levels by 2050. Executive Order B-30-15 requires state agencies to consider climate change in their planning and investment decisions, giving priority to actions that reduce GHG emissions.

Senate Bill 97

SB 97 was passed by the state legislature and approved by Governor Schwarzenegger in August 2007. SB 97 acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. The California Natural Resources Agency adopted amendments to the CEQA Guidelines to address the analysis and mitigation of GHG emissions. The amendments to the CEQA Guidelines implementing SB 97 became effective on March 18, 2010.

Assembly Bill 1826

Governor Brown signed AB 1826 (Chapter 727, Statutes of 2014) in October 2014. AB 1826 requires businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste they generate per week. The law also requires local jurisdictions across California to implement organic waste recycling programs to divert organic waste generated by businesses, including multifamily residential buildings that consist of five or more units.

AB 1826 was enacted to reduce the disposal of organic waste in landfills in effort to reduce GHG emissions from landfills, which is a part of the CARB Climate Change Scoping Plan.

4.14.3.4 Local

County of San Diego Climate Action Plan
In 2012, the County of San Diego developed their Climate Action Plan (CAP) to address the issues of growth and climate change and to safeguard the environment for residents and visitors. Relevant emissions reduction measures include increasing transit use, increasing walking and biking, and increasing ridesharing (County of San Diego 2012). The County of San Diego CAP supports the following primary functions:

- Mitigate the impacts of climate change by achieving meaningful GHG reductions within the County of San Diego, consistent with AB 32, the Governor's Executive Order S-3-05, and CEQA guidelines.
- Allow lead agencies to adopt a plan or program that addresses the cumulative impacts of a project.
- Provide a mechanism that subsequent projects may use as a means to address GHG impacts under CEQA.
- Comply with the 2011 adopted County of San Diego General Plan EIR Mitigation Measures CC-1.2, Preparation of a Climate Action Plan.

City of San Diego Draft Climate Action Plan
The City of San Diego developed a draft CAP in March 2015 to proactively address environmental concerns, including the reduction of GHG emissions. The City's CAP identifies measures to effectively meet GHG reduction targets set by Executive Order S-3-05. Measures include increasing energy generation from renewables, increasing transit use, and increasing walking and biking (City of San Diego 2015). The Draft CAP also includes goals of reducing landfill waste by diverting 75 percent of waste from landfills by 2020 and zero waste disposal by 2040 in effort to reduce CH_4 emissions from landfills.

4.14.4 Applicant Proposed Measures

SDG&E has proposed measures to reduce environmental impacts. The significance of the impact is first considered prior to application of the APMs and a significance determination is made. The implementation of APMs is then considered as part of the Project when determining whether impacts would be significant and thus would require mitigation. These APMs would be incorporated as part of any CPUC project approval, and SDG&E would be required to adhere to the APMs as well as any identified mitigation measures. The APMs are included in the MMRP for the Proposed Project (refer to Chapter 9 of this EIR), and the implementation of the measures would be monitored and documented in the same manner as mitigation measures. The APMs that are applicable to the GHG analysis are provided in Table 4.14-5.

Table 4.14-5 Applicant Proposed Measures for Greenhouse Gas Impacts

APM Number	Requirement
APM AIR-4: Equipment Emissions Standards	All equipment will meet a minimum of USEPA Tier 2 emission standards. For the purpose of this evaluation, equipment would be comprised of a mix of 70 percent Tier 2 equipment and 30 percent Tier 3 equipment. All on-road heavy-duty vehicles, off-road construction vehicles, and portable equipment used in the project will comply with CARB's Airborne Diesel Air Toxic Measures (ATCMs).
APM AIR-5: Consistency with AB 32	Equipment and vehicles supporting construction of the Proposed Project would comply with the requirements implemented by CARB to reduce GHG emissions and would be consistent with AB 32's goals. Additionally, SDG&E would implement ongoing standard internal programs and practices that ensure compliance with CARB's SF_6 regulations and maximum emission rates.

4.14.5 CEQA Significance Criteria

Appendix G of CEQA Guidelines (14 CCR 15000 *et seq.*) provides guidance on assessing whether a project would have significant impacts on the environment. Consistent with Appendix G, the Proposed Project would have significant impacts related to GHGs if it would:

a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment
b. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases

4.14.6 Approach to Impact Analysis

This impact analysis considers whether implementation of the Proposed Project or alternatives would result in significant greenhouse gas impacts. The analysis focuses on reasonably foreseeable effects of the Proposed Project and alternatives as compared with baseline conditions. The analysis uses significance criteria based on the CEQA Appendix G Guidelines. The potential direct and indirect effects of the Proposed Project and alternatives are addressed; cumulative effects are addressed in Chapter 5: Cumulative Impacts. Effects that would result from operation and maintenance of the Proposed Project and alternatives are also addressed. Applicable APMs are identified and mitigation is defined to avoid or reduce significant greenhouse gas impacts.

4.14.6.1 Emission Calculations

Annual GHG emissions for construction and operation of the Proposed Project were calculated using the same approach as for criteria air pollutant emissions (see Air Quality Modeling in Section 4.13.3: Air Quality) with the exception of helicopter fuel usage rates and emissions factors (SDG&E 2015a). Fuel usage rates for helicopters were derived from Table II-1-8, Modal Emissions Rates for Military Aircraft Engines, of EPA AP-42, and emissions factors were derived from the California Climate Action Registry's General Reporting Protocol 3.1. Appendix J presents emission calculations and assumptions spreadsheets supporting the GHG analysis in this section.

4.14.6.2 Emissions Thresholds

SDAPCD does not currently have GHG emission significance thresholds for use in CEQA analyses. The California Governor's Office of Planning and Research's Technical Advisory (OPR 2008) states that:

> 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.

In the absence of a rulemaking by CARB to establish a statewide GHG emission significance threshold, the CPUC assesses the impacts of GHG emissions on a case-by-case basis. In areas of California where the local air pollution control district (APCD) or air quality management district (AQMD) has not adopted a threshold of significance, the CPUC applies a significance threshold that has been adopted by another APCD or AQMD. SCAQMD has adopted an interim threshold of 10,000 $MTCO_2e$ per year amortized over the life of the project (estimated at 30 years) (SCAQMD 2008). The SCAQMD threshold has undergone rigorous public review, and SCAQMD's threshold is the only emissions threshold that takes construction emissions into account. In this analysis, the CPUC has applied the SCAQMD threshold because neither CARB nor the SDAPCD have yet to adopt a threshold.

4.14.7 Proposed Project Impacts and Mitigation Measures

Table 4.14-6 provides a summary of Proposed Project impacts to greenhouse gases prior to application of APMs, after application of APMs and before implementation of mitigation measures, and after the implementation of mitigation measures.

Table 4.14-6 Summary of Proposed Project Impacts to Greenhouse Gases

Significance Criteria	Project Phase	Significance prior to APMs	Significance after APMs and before Mitigation	Significance after Mitigation
Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	Construction	Less than significant	---	---
	Operation and Maintenance	Less than significant	---	---
Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases.	Construction	Significant	Significant APM AIR-4 APM AIR-5	Less than significant MM GHG-1 MM Traffic-1 MM Traffic-7
	Operation and Maintenance	Less than significant	---	---

4.14 GREENHOUSE GASES

Impact GHG-1: Would the Proposed Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? (*Less than significant; no mitigation required)*

Construction

The following Proposed Project construction activities would produce GHG emissions:

- Vegetation clearing at pole work areas, along access roads, and at staging yards
- Grading of permanent work pads and retaining wall construction at six locations along Segments A and D
- Excavating new pole holes along Segments A and D
- Duct bank and vault construction on Segment B
- Pole installation
- Vehicle traffic to and from work sites and staging yards
- Equipment and material transport via trucks and helicopters
- Conductor stringing via helicopters

As discussed previously, the emissions significance threshold of 10,000 $MTCO_2e$ per year has been applied to assess the Proposed Project's impact on GHG emissions. ~~Total e~~ Estimated GHG emissions from construction of the Proposed Project would be up to ~~2,752~~ 92 $MTCO_2e$ (amortized over the 30-year life of the project), as shown in Table 4.14-7. The ~~combined~~ emissions from ~~both years of~~ Project construction would be well below the threshold of 10,000 $MTCO_2e$ per year. Therefore, impacts from GHG emissions would be less than significant. No mitigation is required.

Operation and Maintenance

The Proposed Project's GHG emissions from operation and maintenance would primarily result from vehicle travel to and from the Project area to conduct routine inspections. Vehicle emissions associated with transmission line operation and maintenance would be similar to existing conditions because SDG&E currently conducts maintenance on the transmission and power lines in the ROW, and the Proposed Project would not increase the intensity, frequency, or duration of inspections or maintenance for the overhead transmission line. Maintenance requirements, and therefore vehicle emissions, may be slightly reduced because the number of poles/structures in SDG&E's ROW would be slightly fewer in Segments A and D after construction of the Proposed Project. Inspection of the vaults and maintenance of the underground transmission line in Segment B would require new activity relative to existing conditions because SDG&E does not currently operate any power lines along Segment B. Vehicle emissions from inspections along Segment B would be minimal because inspections would only occur once ~~a~~ every three years.

Total annual CO_2e emissions from operation and maintenance activities would be approximately 4.09 $MTCO_2e$, which is well below the SCAQMD emissions threshold of 10,000 $MTCO_2e$ per year. Therefore, impacts from GHG emissions would be less than significant. No mitigation is required.

Mitigation Measures: None required.

Table 4.14-7 Proposed Project GHG Emissions

Pollutant	GHG Emissions (metric tons)	Global Warming Potential	Annual CO_2 Equivalent Emissions (metric tons)
Construction[1]			
CO2	2,460.43	1	2,460.43
CH4	0.20	28	5.60
N2O	1.08	265	286.20
		~~*Total*~~ *Subtotal*	***2,752.23***
		Amortized (over 30 years)	91.74
		~~Threshold~~	~~10,000~~
		~~Exceeds Threshold?~~	~~No~~
Operation and Maintenance[2]			
CO_2	4.06	1	4.06
CH_4	0.00011	28	0.0031
N_2O	0.00011	265	0.03
		~~*Total*~~ *Subtotal*	***4.09***
		Proposed Project Total	95.83
		Threshold	**10,000**
		Exceeds Threshold?	**No**

Notes:

1 Estimated GHG emissions from construction reflects the combined total of all GHG emissions in 2016 and 2017.

2 Estimated GHG emissions from operation and maintenance are annual.

Sources: IPCC 2013, SDG&E 2015a

Impact GHG-2: Would the Proposed Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases? (*Less than significant with mitigation)*

Construction

Executive Orders S-3-05 and B-30-15

Executive Orders S-3-05 and B-30-15 set the following GHG reduction targets in California:

- Reduce GHG emissions to 2000 levels by 2010;
- Reduce GHG emissions to 1990 levels by 2020;
- Reduce GHG emissions to 40 percent below 1990 levels by 2030; and
- Reduce GHG emissions to 80 percent below 1990 levels by 2050.

The first three targets function as milestones: each target is more stringent than the previous target in order to ensure California meets its goal of reducing GHG emissions to 80 percent

below 1990 levels by 2050. To meet these goals, the Global Warming Solutions Act of 2006 (AB 32) directed CARB to begin developing discrete early actions to reduce GHG emissions and to develop the Climate Change Scoping Plan, which outlines actions for California to meet the 2020 and future GHG reduction targets. Therefore, if the Proposed Project is consistent with the CARB Climate Change Scoping Plan, it would be consistent with Executive Orders S-3-05 and B-30-15. Consistency with the CARB Climate Change Scoping Plan is discussed below. Implementation of Mitigation Measure GHG-1, which requires proper disposal of organic waste, would reduce impacts. Impacts would be less than significant with mitigation.

Climate Change Scoping Plan

Construction activities would result in emissions that are covered by the CARB Climate Change Scoping Plan. Conformity with relevant Climate Change Scoping Plan actions is summarized in Table 4.14-8.

County of San Diego CAP and City of San Diego Draft CAP

Disposal of organic waste that meets or exceeds eight cubic yards per week at a landfill after April 1, 2016 would be in conflict with requirements in AB 1826, which is considered a significant effect. Mitigation Measure GHG-1 requires disposal of organic materials (e.g., vegetation cleared from the site) in a greenwaste recycling program or an alternative to a landfill. Impacts from conflicts with the CARB scoping plan would be less than significant with implementation of Mitigation Measure GHG-1.

Transmission Line. The County of San Diego CAP and City of San Diego Draft CAP include measures to improve existing and install new walking and biking paths, improve safety of pedestrian and bicycle travel, improve transit facilities, and facilitate access to transit facilities (City of San Diego 2015, County of San Diego 2012). The Proposed Project would conflict with the County of San Diego CAP and the City of San Diego Draft CAP because underground transmission line construction within Segment B would require temporary closure of the bike lane on Carmel Valley Road and may require closure of sidewalks near the active work area, preventing use of the bike and pedestrian paths. The impact to bicycle and pedestrian facilities would be a significant impact.

Mitigation Measure Traffic-1 would require SDG&E to develop a Construction Transportation Management Plan that would include the use of detours and flaggers and/or signage to guide pedestrians and bicyclists when sidewalk and bike lane closures are necessary. Mitigation Measure Traffic-7 requires SDG&E to provide notification of any bike lane closures and to provide safe pedestrian access around work areas. The temporary bike and pedestrian path closures would not conflict with the County of San Diego or City of San Diego CAP with implementation of Mitigation Measures Traffic-1 and Traffic-7. Impacts from conflicts with the CAP would be less than significant with mitigation.

The City of San Diego Draft CAP also includes landfill waste reduction goals in effort to reduce CH_4 emissions from landfills. These goals include diverting 75 percent of waste from landfills by 2020 and zero waste disposal by 2040. SDG&E would recycle all possible waste generated

Table 4.14-8 Proposed Project Conformity with CARB Climate Change Scoping Plan Actions

Action	Expected Completion Date	Potential Project Conflict
Propose "Phase 2" on-road heavy-duty vehicle GHG standards (CARB)	2018	Phase 2 on-road heavy-duty vehicle GHG standards are not scheduled to take effect until 2018. The Proposed Project would not conflict with this Climate Change Scoping Plan action because the action is required after the Proposed Project is constructed and the action would apply to MY 2021-2027 vehicles. There would be no impact, and no mitigation is required.
Begin compliance actions for working toward the elimination of disposal of organic waste in landfills if the legislature does not act in 2014 (CalRecycle, CARB)	2016	The legislature enacted AB 1826 in October 2014. Compliance with AB 1826 (discussed below) would ensure compliance with this CARB Scoping Plan Action.
Continue diesel controls that will reduce black carbon emissions by 95 percent from the late 1960s to 2020 (CARB)	2020	The Proposed Project would use diesel-burning vehicles and equipment, which produce black carbon emissions. Diesel regulations such as CARB's Airborne Diesel ATCMs have been used to reduce black carbon emissions. The Climate Change Scoping Plan notes that additional regulations for diesel particulate retrofits and for turnover of legacy fleets are key to continued reductions. It is unclear when or if these regulations will be implemented; however, SDG&E has committed to reducing exhaust emissions by implementing APM AIR-5 and adhering to CARB's ATCMs per APM AIR-4. The Proposed Project would not conflict with this Climate Change Scoping Plan action because the action is required after the Proposed Project is constructed, and no regular diesel-burning vehicle use would be required during operation and maintenance of the Proposed Project. There would be no impact, and no mitigation is required.
Reduce emissions of smog-forming pollutants by about 90 percent below 2010 levels by 2032 to meet the NAAQS for O_3 (CARB)	2032	The Proposed Project would use diesel-burning vehicles and equipment, which produce emissions that would contribute to smog formation. The Proposed Project is consistent with the Eight-hour Ozone Attainment Plan, which was drafted to outline how the O_3 NAAQS will be met (refer to Section 4.13.6: Air Quality). The Proposed Project would not conflict with this Climate Change Scoping Plan action. There would be no impact, and no mitigation is required.

Sources: CARB 2014b

from construction, including packaging materials and excess conductor. The majority of solid waste that would be disposed of at a landfill is expected to be excess soil and excavated materials, which would not contribute to production of CH_4. Impacts would be less than significant. No mitigation is required.

Substations, Encina Hub, and Mission—San Luis Rey Phase Transposition. Substation, Encina Hub, and Mission—San Luis Rey phase transposition construction activities would not impede bike and pedestrian travel and access to transit facilities because work areas would not overlap with bike, pedestrian, and public transit routes. Activities at these areas would not conflict with goals in the County of San Diego CAP and the City of San Diego Draft CAP; there would be no impact.

Operation and Maintenance

Transmission Line

Operation and maintenance activities would be substantially the same as existing activities along transmission line Segments A, C, and D and would involve annual inspections of the overhead transmission line in conjunction with inspections of the existing transmission and power lines in the ROW. The frequency and intensity of maintenance activities in the ROW would be comparable to existing conditions because the number of poles/structures in the SDG&E ROW would be slightly less in Segments A and D with the Proposed Project and there would be no additional structures in Segment C. Visual inspections of the ten new vaults along Segment B would occur ~~annually~~ approximately every three years. SDG&E would implement traffic control to perform certain maintenance activities such as pole replacements and to inspect the vaults. Traffic control may impede access to bicycle lanes for less than a day once ~~a~~ every three years. The impacts would be of such short duration that they would not conflict with the City or County of San Diego CAP goals for increased bicycle access. Therefore, operation and maintenance of the transmission line would have a less than significant impact. No mitigation is required.

A minimal amount of solid waste would be generated from operation and maintenance of the Project. Waste may include replaced parts and packaging of replacement parts, the majority of which would be recycled. The amount of waste generated from operation and maintenance would not conflict with the City of San Diego Draft CAP's waste reduction goals. Impacts would be less than significant. No mitigation is required.

Substations, Encina Hub, and Mission—San Luis Rey Phase Transposition

The Proposed Project modifications at the substations, Encina Hub, and Mission—San Luis Rey phase transposition work areas would not change the operation or maintenance requirements of these existing facilities. Therefore, there would be no impact from conflicts with GHG reduction plans.

Mitigation Measures: GHG-1, Traffic-1, and Traffic-7 (refer to Section 4.7: Transportation and Traffic)

> **Mitigation Measure GHG-1: Disposal of Organic Matter.** In accordance with requirements in Assembly Bill 1826, SDG&E shall dispose of organic waste (defined in PRC Section 42649.8(c) as food waste, green waste, landscape and pruning waste, nonhazardous wood waste, ad food-soiled paper waste that is mixed in with food waste) removed on and after April 1, 2016 by means other

than transporting to a landfill if the amount of organic waste meets or exceeds eight cubic yards per week. On and after January 1, 2017, SDG&E shall dispose of organic waste by means other than transporting to a landfill if the amount of organic waste meets or exceeds four cubic yards per week. Options for non-landfill disposal may include composting on previously disturbed SDG&E land, self-hauling organic waste for recycling, or participating in a greenwaste recycling program in accordance with subdivision (b) of AB 1826. SDG&E shall notify the CPUC of the disposal method at least 30 days prior to construction.

Significance after mitigation: Less than significant.

4.14.8 Alternative 1: Eastern Cable Pole at Carmel Valley Road (Avoids Cable Pole in Black Mountain Ranch Community Park)

Alternative 1 would involve installation of a new cable pole immediately south of and adjoining Carmel Valley Road within existing SDG&E ROW, transitioning the Segment A overhead transmission line directly into the proposed Carmel Valley Road Segment B underground alignment. Alternative 1 would avoid installation of a cable pole and underground duct bank within the Black Mountain Ranch Community Park. This alternative is described in more detail in Chapter 3: Alternatives.

4.14.8.1 Alternative 1 Environmental Setting

The existing GHG conditions for the Proposed Project described in Section 4.14.2 would apply to this alternative because Alternative 1 would be constructed in the same general location and manner as the Proposed Project.

4.14.8.2 Alternative 1 Impacts and Mitigation Measures

Table 4.14-9 summarizes the impacts to GHG emissions from Alternative 1.

Table 4.14-9 Summary of Alternative 1 Impacts to Greenhouse Gases

Significance Criteria	Project Phase	Significance Prior to APMs	Significance after APMs and before Mitigation	Significance after Mitigation
Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	Construction	Less than significant	---	---
	Operation and Maintenance	Less than significant	---	---
Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases.	Construction	Significant	Significant APM AIR-4 APM AIR-5	Less than significant MM GHG-1 MM Traffic-1 MM Traffic-7
	Operation and Maintenance	Less than significant	---	---

Impact GHG-1: Would Alternative 1 generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? (*Less than significant; no mitigation required)*

Construction

Relocation of the cable pole under Alternative 1 would not substantially change GHG emissions from those associated with construction of the cable pole under the Proposed Project because construction of a cable pole would produce commensurate emissions regardless of its location. Construction of Alternative 1 would not exceed the threshold of 10,000 $MTCO_2e$ per year; in comparison to the 2,752 $MTCO_2e$ of GHG emissions produced by construction of the entire Proposed Project, construction of a single pole would be negligible. Impacts from GHG emissions would be less than significant. No mitigation is required.

Operation and Maintenance

Operation and maintenance would require similar inspection and maintenance with the same frequency as existing conditions and would therefore not result in additional emissions. Impacts would be less than significant. No mitigation is required.

Mitigation Measures: None required.

Impact GHG-2: Would Alternative 1 conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases? (*Less than significant with mitigation)*

Construction

Executive Orders S-3-05 and B-30-15

Conformity with the Climate Change Scoping Plan would also ensure conformity with Executive Orders S-3-05 and B-30-15 because CARB designed the Climate Change Scoping Plan to be consistent with goals defined in these Executive Orders, as discussed in Section 4.14-7 above. Therefore, impacts from conflicts with Executive Orders S-3-05 and B-30-15 would be less than significant with implementation of Mitigation Measure GHG-1, which requires proper disposal of organic waste.

Climate Change Scoping Plan

Conformity with relevant Climate Change Scoping Plan actions is summarized in Table 4.14-8. Alternative 1 could conflict with CARB's Climate Change Scoping Plan action for elimination of organic waste disposal in landfills, resulting in a significant impact. Impacts from conflicts with the CARB Climate Change Scoping Plan would be less than significant with implementation of Mitigation Measure GHG-1, which requires green waste disposal through composting or participating in a green waste recycling program.

County of San Diego CAP and City of San Diego Draft CAP

Alternative 1 would conflict with the County of San Diego CAP and the City of San Diego Draft CAP due to temporary bike and pedestrian path closures necessary during construction of the cable pole, which would inhibit use of these paths and result in a significant impact. Temporary

bike and pedestrian path closures along Carmel Valley Road would not conflict with the County or City of San Diego CAP with implementation of Mitigation Measure Traffic-1, which requires implementation of a project-specific CTMP, and Mitigation Measure Traffic-7, which requires closure notification and detours for pedestrians and bicyclists. Impacts from conflicts with the CAPs would be less than significant with mitigation.

Alternative 1 would not conflict with landfill waste reduction goals in the City of San Diego Draft CAP. Impacts would be less than significant. No mitigation is required.

Operation and Maintenance

Alternative 1 would be operated and maintained in the same manner as the Proposed Project and would result in the same generation of waste and temporary lane closures as the Proposed Project. Impacts would be less than significant. No mitigation is required.

Mitigation Measures: GHG-1 (refer to Section 4.14.7), Traffic-1, and Traffic-7 (refer to Section 4.7: Transportation and Traffic)

Significance after mitigation: Less than significant.

4.14.9 Alternatives 2a and 2b: Eastern Cable Pole at Pole P40 and Underground Alignment through City Open Space or City Water Utility Service Road (Avoids Cable Pole in Black Mountain Ranch Community Park)

Alternative 2 would involve installation of a new cable pole in the same location for both Alternatives 2a and 2b, approximately 300 feet south of Carmel Valley Road within existing SDG&E ROW, transitioning the Segment A overhead transmission line into the proposed Carmel Valley Road Segment B underground alignment via one of two underground alignment options. Alternative 2a would locate the underground duct bank west of SDG&E ROW through City of San Diego open space and into Carmel Valley Road. Alternative 2b would locate the underground duct bank east of SDG&E ROW through a City of San Diego water utility service road and into Carmel Valley Road. Both Alternative 2a and 2b would avoid installation of a cable pole and underground duct bank within the Black Mountain Ranch Community Park. This alternative is described in more detail in Chapter 3: Alternatives.

4.14.9.1 Alternative 2 Environmental Setting

The existing GHG conditions for the Proposed Project described in Section 4.14.2 apply because Alternative 2 would be constructed in the same general location as the Proposed Project.

4.14.9.2 Alternative 2 Impacts and Mitigation Measures

Table 4.14-10 summarizes the impacts to GHG emissions from Alternative 2.

Table 4.14-10 Summary of Alternative 2 Impacts to Greenhouse Gases

Significance Criteria	Project Phase	Significance prior to APMs	Significance after APMs and before Mitigation	Significance after Mitigation
Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	Construction	Less than significant	---	---
	Operation and Maintenance	Less than significant	---	---
Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases.	Construction	Significant	Significant APM AIR-4 APM AIR-5	Less than significant MM GHG-1 MM Traffic-1 MM Traffic-7
	Operation and Maintenance	Less than significant	---	---

Impact GHG-1: Would Alternative 2 generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? (*Less than significant; no mitigation required)*

Construction

Relocation of the cable pole under Alternative 2 would not substantially change GHG emissions from those associated with construction of the cable pole under the Proposed Project because construction of a cable pole would produce commensurate emissions regardless of its location. Construction of Alternative 2 would not exceed the threshold of 10,000 $MTCO_2e$ per year; in comparison to the 2,752 $MTCO_2e$ of GHG emissions produced by construction of the entire Proposed Project, construction of a single pole and approximately 960 feet of underground transmission line would be negligible. Impacts from GHG emissions would be less than significant. No mitigation is required.

Operation and Maintenance

Operation and maintenance would require similar inspection and maintenance with the same frequency as existing conditions and would therefore not result in additional emissions. Impacts would be less than significant. No mitigation is required.

Mitigation Measures: None required.

Impact GHG-2: Would Alternative 2 conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases? (*Less than significant with mitigation)*

Construction

Executive Orders S-3-05 and B-30-15

Conformity with the Climate Change Scoping Plan would also ensure conformity with Executive Orders S-3-05 and B-30-15 because CARB designed the Climate Change Scoping Plan

to be consistent with goals defined in these Executive Orders, as discussed in Section 4.14-7 above. Therefore, impacts from conflicts with Executive Orders S-3-05 and B-30-15 would be less than significant with implementation of Mitigation Measure GHG-1, which requires proper disposal of organic waste.

Climate Change Scoping Plan

Conformity with relevant Climate Change Scoping Plan actions is summarized in Table 4.14-8. Alternative 2 could conflict with CARB's Climate Change Scoping Plan action for elimination of organic waste disposal in landfills, resulting in a significant impact. Impacts from conflicts with the CARB Climate Change Scoping Plan would be less than significant with implementation of Mitigation Measure GHG-1, which requires green waste disposal through composting or participating in a green waste recycling program.

County of San Diego CAP and City of San Diego Draft CAP

Alternative 2 would conflict with the County of San Diego CAP and the City of San Diego Draft CAP due to temporary bike and pedestrian path closures on Carmel Valley Road where the transmission line would connect with Proposed Project Segment B, resulting in a significant impact. Temporary bike and pedestrian path closures along Carmel Valley Road would not conflict with the County or City of San Diego CAP with implementation of Mitigation Measure Traffic-1, which requires implementation of a project-specific CTMP, and Mitigation Measure Traffic-7, which requires closure notification and detours for pedestrians and bicyclists. Impacts from conflicts with the CAPs would be less than significant with mitigation.

Alternative 2 would not conflict with landfill waste reduction goals in the City of San Diego Draft CAP. Impacts would be less than significant. No mitigation is required.

Operation and Maintenance

Alternative 2 would be operated and maintained in the same manner as the Proposed Project and would result in the same generation of waste and temporary lane closures as the Proposed Project. Impacts would be less than significant, and no mitigation is required.

Mitigation Measures: GHG-1 (refer to Section 4.14.7), Traffic-1, and Traffic-7 (refer to Section 4.7: Transportation and Traffic)

Significance after mitigation: Less than significant.

4.14.10 Alternative 3: Los Peñasquitos Canyon Preserve – Mercy Road Underground (Avoids Overhead in Northern Half of Segment A, Underground in Segment B, and Overhead in Segment C)

Alternative 3 would include installing an underground alignment starting at a new cable pole where the existing SDG&E ROW crosses Ivy Hill Road and ending at a new cable pole approximately 550 feet west of the Peñasquitos Junction (i.e., where Proposed Project Segments C and D meet). The underground alignment would follow Scripps Poway Parkway, Mercy Road, Black Mountain Road, and finally Park Village Road. Alternative 3 would bypass the

northern half of Proposed Project Segment A and all of Proposed Project Segments B and C. This alternative is described in more detail in Chapter 3: Alternatives.

4.14.10.1 Alternative 3 Environmental Setting

The existing GHG conditions for the Proposed Project described in Section 4.14.2 apply because Alternative 3 would be constructed in the same region as the Proposed Project.

4.14.10.2 Alternative 3 Impacts and Mitigation Measures

Table 4.14-11 summarizes the impacts to GHG emissions from Alternative 3.

Table 4.14-11 Summary of Alternative 3 Impacts to Greenhouse Gases

Significance Criteria	Project Phase	Significance Prior to APMs	Significance after APMs and before Mitigation	Significance after Mitigation
Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	Construction	Less than significant	---	---
	Operation and Maintenance	Less than significant	---	---
Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases.	Construction	Significant	Significant APM AIR-4 APM AIR-5	Less than significant MM GHG-1 MM Traffic-1 MM Traffic-7
	Operation and Maintenance	Less than significant	---	---

Impact GHG-1: Would Alternative 3 generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? (*Less than significant; no mitigation required)*

Construction

Analysis of construction emissions from only Alternative 3 would not adequately depict GHG emissions from construction of the alternative because Alternative 3 would be not constructed independently of the Proposed Project but rather in lieu of the northern half Proposed Project Segment A and all of Segments B and C. An analysis of GHG emissions from construction of Alternative 3 and the connecting segments of the Proposed Project, including the southern half of Segment A and all of Segment D, is therefore provided below.

As shown in Table 4.14-12, total estimated CO_2e emissions from construction of Alternative 3 and the connecting segments of the Proposed Project would be up to ~~3,622~~ 121 $MTCO_2e$ (amortized over the 30-year life of the project), which is approximately ~~870~~ 29 $MTCO_2e$ greater than emissions from construction of the Proposed Project. Alternative 3 would require additional run time of diesel-powered equipment to construct a longer underground transmission line. Additional equipment use accounts for the increase in GHG emissions compared to the Proposed Project. ~~The combined e~~ Emissions from ~~both years of~~ Alternative 3

Table 4.14-12 Alternative 3 GHG Emissions

Pollutant	GHG Emissions (metric tons)	Global Warming Potential	Annual CO2 Equivalent Emissions (metric tons)
Construction[1]			
CO_2	3,298.2	1	3,298.2
CH_4	0.2	28	5.6
N_2O	1.2	265	318.0
		~~*Total*~~ *Subtotal*	***3,621.8***
		Amortized (over 30 years)	120.73
		~~Threshold~~	~~10,000~~
		~~Exceeds Threshold?~~	~~No~~
Operation and Maintenance[2]			
CO_2	4.1	1	4.1
CH_4	0.0001	28	0.003
N_2O	0.0001	265	0.03
		~~*Total*~~ *Subtotal*	***4.1***
		Alternative 3 Total	124.83
		Threshold	**10,000**
		Exceeds Threshold?	**No**

Notes:

[1] Estimated GHG emissions from construction reflect the combined total of emissions in 2016 and 2017.

[2] Estimated GHG emissions from operation and maintenance are annual. Emissions from Alternative 3 are assumed to be similar to emissions from the Proposed Project.

Sources: IPCC 2013, SDG&E 2015a, SDG&E 2015b

construction would be well below the threshold of 10,000 $MTCO_2e$ per year. Therefore, impacts from GHG emissions would be less than significant. No mitigation is required.

Operation and Maintenance

Alternative 3 would require ~~annual~~ inspections approximately every three years similar to inspections for the Proposed Project. Therefore, Alternative 3 GHG emissions during operation and maintenance would be similar to the Proposed Project. Total annual CO_2e emissions from operation and maintenance activities would be approximately 4.1 $MTCO_2e$, which is well below the SCAQMD emissions threshold of 10,000 $MTCO_2e$ per year. Impacts would be less than significant. No mitigation is required.

Mitigation Measures: None required.

Impact GHG-2: Would Alternative 3 conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases? (*Less than significant with mitigation)*

Construction

Executive Orders S-3-05 and B-30-15

Conformity with the Climate Change Scoping Plan would also ensure conformity with Executive Orders S-3-05 and B-30-15 because CARB designed the Climate Change Scoping Plan to be consistent with goals defined in these Executive Orders, as discussed in Section 4.14-7 above. Therefore, impacts from conflicts with Executive Orders S-3-05 and B-30-15 would be less than significant with implementation of Mitigation Measure GHG-1, which requires proper disposal of organic waste.

Climate Change Scoping Plan

Conformity with relevant Climate Change Scoping Plan actions is summarized in Table 4.14-8. Alternative 3 could conflict with CARB's Climate Change Scoping Plan action for elimination of organic waste disposal in landfills, resulting in a significant impact. Impacts from conflicts with the CARB Climate Change Scoping Plan would be less than significant with implementation of Mitigation Measure GHG-1, which requires green waste disposal through composting or participating in a green waste recycling program.

County of San Diego CAP and City of San Diego Draft CAP

Alternative 3 would conflict with the County of San Diego CAP and the City of San Diego Draft CAP due to temporary bike and pedestrian path closures during construction of the underground duct bank, resulting in a significant impact. Temporary bike and pedestrian path closures along the Alternative 3 alignment would not conflict with the County or City of San Diego CAPs with implementation of Mitigation Measure Traffic-1, which requires implementation of a project-specific CTMP, and Mitigation Measure Traffic-7, which requires closure notification and detours for pedestrians and bicyclists. Impacts from conflicts with the CAPs would be less than significant with mitigation.

Alternative 3 would not conflict with landfill waste reduction goals in the City of San Diego Draft CAP. Impacts would be less than significant. No mitigation is required.

Operation and Maintenance

Operation and maintenance of Alternative 3 would involve ~~annual~~ inspections and maintenance activities in the same manner and with the same frequency and intensity as ~~annual~~ inspections for Proposed Project Segment B. Operation and maintenance would not conflict with City or County CAP goals. Impacts would be less than significant. No mitigation is required.

Mitigation Measures: GHG-1 (refer to Section 4.14.7), Traffic-1, and Traffic-7 (refer to Section 4.7: Transportation and Traffic)

Significance after mitigation: Less than significant.

4.14.11 Alternative 4: Segment D 69-kV Partial Underground Alignment (Reduces New TSPs in Segment D)

Alternative 4 would include the installation of a double 69-kV underground alignment starting at two new cable poles (P48AA and P48BB) in Proposed Project Segment D near existing lattice tower E17. The underground alignment would follow Carmel Mountain Road and East Ocean Air Drive, ending at the Peñasquitos Substation. Within Proposed Project Segment D, an existing 69-kV line would be removed from the existing steel lattice towers, and a second 69-kV power line on existing H-frame structures would be de-energized and left in place. Construction within Proposed Project Segment D would be reduced under Alternative 4. The 230-kV transmission line would be installed on the existing steel lattice towers similar to the Proposed Project; however, the H-frame structures would not be removed, and no new TSPs would be installed between lattice tower E17 and the Peñasquitos Substation. This alternative is described in more detail in Chapter 3: Alternatives.

4.14.11.1 Alternative 4 Environmental Setting

The existing GHG conditions for the Proposed Project described in Section 4.14.2 apply because Alternative 4 would be constructed in the same region as the Proposed Project.

4.14.11.2 Alternative 4 Impacts and Mitigation Measures

Table 4.14-13 summarizes the impacts to GHG emissions from Alternative 4.

Table 4.14-13 Summary of Alternative 4 Impacts to Greenhouse Gases

Significance Criteria	Project Phase	Significance Prior to APMs	Significance after APMs and before Mitigation	Significance after Mitigation
Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	Construction	Less than significant	---	---
	Operation and Maintenance	Less than significant	---	---
Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases.	Construction	Significant	Significant APM AIR-4 APM AIR-5	Less than significant MM GHG-1 MM Traffic-1 MM Traffic-7
	Operation and Maintenance	Less than significant	---	---

Impact GHG-1: Would Alternative 4 generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? (*Less than significant; no mitigation required)*

Construction

Analysis of construction emissions from only Alternative 4 would not adequately depict GHG emissions from construction of the alternative because Alternative 4 would be not constructed independently of the Proposed Project but rather in lieu of a portion of the construction in

Proposed Project Segment D. An analysis of GHG emissions from construction of Alternative 4 and the connecting segments of the Proposed Project, including Segments A, B, and C, is therefore provided below.

As shown in Table 4.14-14, total estimated CO_2e emissions from construction of Alternative 4 and the connecting segments of the Proposed Project would be up to ~~4,020~~ 135 $MTCO_2e$ (amortized over the 30-year life of the project), which is ~~1,268~~ 43 $MTCO_2e$ greater than emissions from construction of the Proposed Project. Alternative 4 would require additional run time of diesel-powered equipment to construct the underground transmission line within Carmel Mountain Road and East Ocean Air Drive. Additional equipment use accounts for the increase in GHG emissions compared to the Proposed Project. The ~~combined~~ emissions from ~~both years of~~ Alternative 4 construction would be well below the threshold of 10,000 $MTCO_2e$ per year. Therefore, impacts from GHG emissions would be less than significant. No mitigation is required.

Table 4.14-14 Alternative 4 GHG Emissions

Pollutant	GHG Emissions (metric tons)	Global Warming Potential	Annual CO2 Equivalent Emissions (metric tons)
Construction[1]			
CO_2	3,658.49	1	3,658.5
CH_4	0.22	28	6.2
N_2O	1.34	265	355.1
		~~*Total*~~ *Subtotal*	***4,019.8***
		Amortized (over 30 years)	**134.99**
		~~**Threshold**~~	~~**10,000**~~
		~~**Exceeds Threshold?**~~	~~**No**~~
Operation and Maintenance[2]			
CO_2	4.06	1	4.06
CH_4	0.00011	28	0.003
N_2O	0.00011	265	0.03
		~~*Total*~~ *Subtotal*	***4.09***
		Alternative 4 Total	**139.08**
		Threshold	**10,000**
		Exceeds Threshold?	**No**

Notes:

1 Estimated GHG emissions from construction reflect the combined total of emissions in 2016 and 2017.

2 Estimated GHG emissions from operation and maintenance are annual. Emissions from Alternative 4 are assumed to be similar to emissions from the Proposed Project.

Sources: IPCC 2013, SDG&E 2015a, SDG&E 2015b

Operation and Maintenance

~~Annual i~~Inspections of the underground transmission line in Alternative 4 would be similar to inspections of Proposed Project Segment B. The addition of ~~annual~~ vault inspection along Carmel Mountain Road and East Ocean Air Drive would not substantially increase GHG emissions because vault inspections would occur for less than 1 day per vault ~~each~~ every three years. Total annual CO_2e emissions from operation and maintenance activities would be approximately 4.1 $MTCO_2e$, which is well below the SCAQMD emissions threshold of 10,000 $MTCO_2e$ per year. Impacts would be less than significant. No mitigation is required.

Mitigation Measures: None required.

Impact GHG-2: Would Alternative 4 conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases? (*Less than significant with mitigation)*

Construction

Executive Orders S-3-05 and B-30-15

Conformity with the Climate Change Scoping Plan would also ensure conformity with Executive Orders S-3-05 and B-30-15 because CARB designed the Climate Change Scoping Plan to be consistent with goals defined in these Executive Orders, as discussed in Section 4.14-7 above. Therefore, impacts from conflicts with Executive Orders S-3-05 and B-30-15 would be less than significant with implementation of Mitigation Measure GHG-1, which requires proper disposal of organic waste.

Climate Change Scoping Plan

Conformity with relevant Climate Change Scoping Plan actions is summarized in Table 4.14-8. Alternative 4 could conflict with CARB's Climate Change Scoping Plan action for elimination of organic waste disposal in landfills, resulting in a significant impact. Impacts from conflicts with the CARB Climate Change Scoping Plan would be less than significant with implementation of Mitigation Measure GHG-1, which requires green waste disposal through composting or participating in a green waste recycling program.

County of San Diego CAP and City of San Diego Draft CAP

Alternative 4 would conflict with the County of San Diego CAP and the City of San Diego Draft CAP due to temporary bike and pedestrian path closures along Carmel Mountain Road and East Ocean Air Drive, resulting in a significant impact. Temporary bike and pedestrian path closures would not conflict with the County or City of San Diego CAP with implementation of Mitigation Measures Traffic-1, which requires implementation of a project-specific CTMP, and Mitigation Measure Traffic-7, which requires closure notification and detours for pedestrians and bicyclists. Impacts from conflicts with the CAPs would be less than significant with mitigation.

Alternative 4 would not conflict with landfill waste reduction goals in the City of San Diego Draft CAP. Impacts would be less than significant. No mitigation is required.

Operation and Maintenance

~~Annual i~~Inspections along the underground portion within Carmel Mountain Road would occur in the same manner as ~~annual~~ inspections for Proposed Project Segment B. Operation and maintenance would not conflict with City or County CAP goals. Impacts would be less than significant. No mitigation is required.

Mitigation Measures: GHG-1 (refer to Section 4.14.7), Traffic-1, and Traffic-7 (refer to Section 4.7: Transportation and Traffic)

Significance after mitigation: Less than significant.

4.14.12 Alternative 5: Pomerado Road to Miramar Area North Combination Underground/Overhead (Avoids All Proposed Project Segments)

Alternative 5 would include underground installation of the transmission line with the exception of the east and west ends where the transmission line would be installed in an overhead position within existing SDG&E ROWs. Under this alternative, the alignment would exit the Sycamore Canyon Substation at MCAS Miramar an overhead line and travel westerly within an existing SDG&E ROW toward Stonebridge Parkway. The transmission line would transition to underground beneath Stonebridge Parkway in the vicinity of Greenstone Court, then continue underground on Pomerado Road, Miramar Road, Kearny Villa Road, Black Mountain Road, Activity Road, Camino Ruiz, Miralani Drive, Arjons Drive, Trade Place, Camino Santa Fe, Carroll Road/Carroll Canyon Road and Scranton Road. The transmission line would either remain underground within the Pomerado/Miramar bridge or temporarily transition to an overhead alignment via two new cable poles and potentially two new interset poles, where it would cross I-15. At the western end of the underground portion, the line would transition back to overhead structures located within an existing SDG&E ROW heading northward into the Peñasquitos Substation. Alternative 5 would avoid construction within the Proposed Project alignment with the exception of approximately 3,400 feet of existing SDG&E ROW in Segment A connecting to the Sycamore Canyon Substation. SDG&E may use up to eight other staging yards during construction of Alternative 5 in addition to the Proposed Project staging yards. The Alternative 5 staging yards would be located within the Conrock and Hanson Aggregates Pacific Southwest quarries north of the Alternative 5 underground alignment, within the cul-de-sac west of Birch Canyon Place, off of Summers Ridge Road, and behind the Sorrento Canyon Golf Center. This alternative is described in more detail in Chapter 3: Alternatives.

4.14.12.1 Alternative 5 Environmental Setting

The existing GHG conditions for the Proposed Project described in Section 4.14.2 apply because Alternative 5 would be constructed in the same region.

Eight additional staging yards would be available for use during the construction of Alternative 5 (refer to Figure 3.5-5). One purpose of locating staging yards closer to the Alternative 5 alignment would be to reduce vehicle miles traveled for the transport of equipment and construction materials. The reduction of vehicle miles traveled would reduce GHG emissions

associated with construction of Alternative 5. The model used to estimate GHG emissions assumed use of only the Proposed Project staging yards (refer to Section 2.3.3.1 of the EIR), which are located farther from the Alternative 5 alignment than the newly proposed Alternative 5 staging yards. Because Alternative 5 could also utilize the Proposed Project staging yards, the model and, consequently, the impact analysis assume use of only the Proposed Project staging yards to conservatively estimate GHG emissions from construction of Alternative 5.

4.14.12.2 Alternative 5 Impacts and Mitigation Measures

Table 4.14-15 summarizes the impacts to GHG emissions from Alternative 5.

Table 4.14-15 Summary of Alternative 5 Impacts to Greenhouse Gases

Significance Criteria	Project Phase	Significance Prior to APMs	Significance after APMs and before Mitigation	Significance after Mitigation
Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	Construction	Less than significant	---	---
	Operation and Maintenance	Less than significant	---	---
Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases.	Construction	Significant	Significant APM AIR-4 APM AIR-5	Less than significant MM GHG-1 MM Traffic-1 MM Traffic-7
	Operation and Maintenance	Less than significant	---	---

Impact GHG-1: Would Alternative 5 generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? (*Less than significant; no mitigation required)*

Construction

As shown in Table 4.14-16, total estimated CO_2e emissions from construction of Alternative 5 would be up to ~~6,611~~ 220 $MTCO_2e$ (amortized over the 30-year life of the project), which is approximately ~~3,859~~ 129 $MTCO_2e$ greater than emissions from construction of the Proposed Project. Alternative 5 would require considerably longer run time of diesel-powered equipment to construct the underground transmission line within 11.5 miles of roads. Additional equipment use accounts for the increase in GHG emissions compared to the Proposed Project. The ~~combined~~ emissions from ~~both years of~~ Alternative 5 construction would be below the threshold of 10,000 $MTCO_2e$ per year. Therefore, impacts from GHG emissions would be less than significant. No mitigation is required.

Table 4.14-16 Alternative 5 GHG Emissions

Pollutant	GHG Emissions (metric tons)	Global Warming Potential	Annual CO2 Equivalent Emissions (metric tons)
Construction[1]			
CO_2	6,175.7	1	6,175.7
CH_4	0.4	28	11.2
N_2O	1.6	265	424.0
		~~*Total*~~ *Subtotal*	***6,610.9***
		Amortized (over 30 years)	220.36
		~~Threshold~~	~~10,000~~
		~~Exceeds Threshold?~~	~~No~~
Operation and Maintenance[2]			
CO_2	4.06	1	4.06
CH_4	0.00011	28	0.003
N_2O	0.00011	265	0.03
		~~*Total*~~ *Subtotal*	***4.09***
		Alternative 5 Total	~~**6,615.0**~~ **224.45**
		Threshold	**10,000**
		Exceeds Threshold?	**No**

Notes:

1 Estimated GHG emissions from construction reflect the combined total of all GHG emissions in 2016 and 2017.

2 Estimated GHG emissions from operation and maintenance are annual. Emissions from Alternative 5 would likely be less than the Proposed Project; however, 4.1 $MTCO_2e$ is used as a conservative estimate.

Source: IPCC 2013, SDG&E 2015b

Operation and Maintenance

The overhead portions of Alternative 5 would be operated and maintained in a similar manner to the overhead segments of the Proposed Project because SDG&E currently conducts maintenance on the transmission and power lines in both ROWs. The majority of the Alternative 5 alignment would be underground and would require ~~annual~~ inspections of vaults approximately every three years. Emissions from inspections of Alternative 5 would be lower than the Proposed Project because inspections along the majority of the alignment (underground portion) would only occur once ~~a~~ every three years and would not require helicopter use. Maintenance requirements would also be reduced because there would be no transmission structures to maintain and no vegetation would require removal within the 11.5 miles of underground transmission line.

Total annual CO_2e emissions from operation and maintenance activities would be less than the Proposed Project level of 4.1 $MTCO_2e$, which is well below the SCAQMD emissions threshold of 10,000 $MTCO_2e$ per year. Impacts would be less than significant. No mitigation is required.

Mitigation Measures: None required.

Impact GHG-2: Would Alternative 5 conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases? (*Less than significant with mitigation)*

Construction

Executive Orders S-3-05 and B-30-15

Conformity with the Climate Change Scoping Plan would also ensure conformity with Executive Orders S-3-05 and B-30-15 because CARB designed the Climate Change Scoping Plan to be consistent with goals defined in these Executive Orders, as discussed in Section 4.14-7 above. Therefore, impacts from conflicts with Executive Orders S-3-05 and B-30-15 would be less than significant with implementation of Mitigation Measure GHG-1, which requires proper disposal of organic waste.

Climate Change Scoping Plan

Conformity with relevant Climate Change Scoping Plan actions is summarized in Table 4.14-8. Alternative 5 would conflict with CARB's Climate Change Scoping Plan action for elimination of organic waste disposal in landfills, resulting in a significant impact. Impacts from conflicts with the CARB Climate Change Scoping Plan would be less than significant with implementation of Mitigation Measure GHG-1, which requires green waste disposal through composting or participating in a green waste recycling program.

County of San Diego CAP and City of San Diego Draft CAP

Alternative 5 would conflict with the County of San Diego CAP and the City of San Diego Draft CAP due to temporary bike and pedestrian path closures along the underground alignment between P5 and Carroll Canyon Road, which would be a significant impact. Alternative 5 would have a greater potential to conflict with these plans because underground transmission line construction would require temporary closure of bike lanes on approximately 8.7 more miles of roads and may require temporary closure of 6.4 more miles of sidewalks than the Proposed Project. Temporary bike and pedestrian path closures along the underground portion of Alternative 5 would not conflict with the County or City of San Diego CAPs with implementation of Mitigation Measures Traffic-1, which requires implementation of a project-specific CTMP, and Mitigation Measure Traffic-7, which requires closure notification and detours for pedestrians and bicyclists. Impacts from conflicts with the CAPs would be less than significant with mitigation.

Alternative 5 would not conflict with landfill waste reduction goals in the City of San Diego Draft CAP. Impacts would be less than significant. No mitigation is required.

Operation and Maintenance

Alternative 5 would be operated and maintained in a similar manner to the Proposed Project. The overhead transmission lines would require similar operation and maintenance activities to the overhead segments of the Proposed Project. Vaults along the underground portion of Alternative 5 would require ~~annual~~ inspection approximately every three years similar to Proposed Project Segment B. Operation and maintenance of Alternative 5 would not conflict with City or County CAP goals. Impacts would be less than significant. No mitigation is required.

Mitigation Measures: GHG-1 (refer to Section 4.14.7), Traffic-1, and Traffic-7 (refer to Section 4.7: Transportation and Traffic)

Significance after mitigation: Less than significant.

4.14.13 No Project Alternative

The No Project Alternative would include construction of the CAISO approved Mission—Peñasquitos 230-kV transmission line, ~~and~~ Second Poway—Pomerado 69-kV power line, Second Miguel—Bay Boulevard 230-kV transmission line, and Second Sycamore Canyon—Scripps 69-kV power line, and upgrades of the Miguel—Mission 230-kV, Bernardo—Felicita Tap—Felicita 69-kV, and Artesian—Bernardo 69-kV lines. ~~The No Project Alternative would also involve installation of a series reactor at Sycamore Canyon Substation.~~ This alternative is described in more detail in Chapter 3: Alternatives. Emissions would be ~~lower~~ greater than the Proposed Project because the No Project Alternative would ~~not involve underground duct bank construction, which produces substantially~~ involve construction along approximately 69 more miles than the Proposed Project. The No Project Alternative would potentially involve underground construction similar to the Proposed Project, which would produce more emissions than overhead transmission or power line construction.

~~4.14.13.1 Mission—Peñasquitos 230-kV Transmission Line Second Poway—Pomerado 69-kV Line~~

Construction of the Mission—Peñasquitos transmission line, ~~and~~ Second Poway—Pomerado line, Second Miguel—Bay Boulevard 230-kV transmission line, Second Sycamore Canyon—Scripps 69-kV power line, and the reconductoring of the three existing lines would require the use of diesel-powered equipment and possibly helicopters to install new structures to accommodate the new transmission and power lines. Use of equipment and helicopters would emit GHGs. ~~GHG emissions from c~~Construction along approximately ~~17.7~~ 69 more miles ~~of transmission corridor~~ than the Proposed Project would produce more GHG emissions than the Proposed Project. However, the activity level would be comparable to activity in Segments A and C, which would produce fewer emissions than underground construction. GHG emissions from construction of the No Project Alternative would be less than significant because the activity level for construction would be less than the Proposed Project; ~~and the Proposed Project GHG emissions would be less than significant~~ emissions would not exceed the emissions threshold of 10,000 $MTCO_2e$ per year amortized over 30 years (estimated project life).

~~**4.14.13.2 Series Reactor at Sycamore Canyon Substation**~~

~~Installation of a series reactor at Sycamore Canyon Substation would have a less than significant impact on greenhouse gases because the activity level for installing a series reactor would be much less than the Proposed Project and the Proposed Project greenhouse gas emissions would be less than significant.~~

4.14.14 References

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