

TABLE OF CONTENTS

4.7 GREENHOUSE GAS EMISSIONS..... 4.7-1
4.7.0 Introduction..... 4.7-1
4.7.1 Methodology..... 4.7-1
4.7.2 Existing Conditions..... 4.7-1
4.7.3 Impacts..... 4.7-8
4.7.4 Applicant-Proposed Measures 4.7-10
4.7.5 References..... 4.7-10

LIST OF TABLES

Table 4.7-1: Global Warming Potentials and Atmospheric Lifetimes of GHGs 4.7-2
Table 4.7-2: State of California Greenhouse Gas Emissions by Sector 4.7-3
Table 4.7-3: Greenhouse Gas Construction Emissions..... 4.7-9

4.7 GREENHOUSE GAS EMISSIONS

Would the Proposed Project:	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
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 emissions of greenhouse gases?				✓

4.7.0 Introduction

This section discusses the existing greenhouse gases (GHGs) in the area for the proposed San Diego Gas & Electric Company (SDG&E) TL674A Reconfiguration & TL666D Removal Project (Proposed Project) and assesses the potential GHG impacts associated with construction and operation of the Proposed Project. Although some temporary impacts will result during construction activities, the potential GHG impacts from the Proposed Project will be less than significant with the implementation of SDG&E’s Project Design Features and Ordinary Construction Restrictions. No impacts will occur during operation and maintenance (O&M) of the Proposed Project.

4.7.1 Methodology

The simulated GHG emissions presented in this section were developed using the South Coast Air Quality Management District’s (SCAQMD’s) California Emissions Estimator Model (CalEEMod) Version 2013.2.2. This analysis of GHG emissions evaluates the Proposed Project’s potential to generate GHG emissions during the construction and operational phases. GHG emissions were calculated with the intent of identifying the biggest contributors of GHGs. Federal, state, and regional/local regulations and policies were then reviewed to determine the Proposed Project’s level of compliance with—and potential impacts to—applicable climate action plans and/or GHG standards. Information for this section was obtained from federal, state, and regional/local websites.

4.7.2 Existing Conditions

Global climate change refers to changes in average climatic conditions on Earth as a whole, including temperature, wind patterns, precipitation, and storms. Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), which are known as GHGs. These GHGs allow solar radiation (i.e., sunlight) into Earth’s atmosphere, but prevent radiative heat from escaping, thus warming Earth’s atmosphere.

Gases that trap heat in the atmosphere are often called GHGs, analogous to a greenhouse. GHGs are emitted by both natural processes and human activities. The accumulation of GHGs in the atmosphere regulates Earth’s temperature. Emissions from human activities, such as burning fossil fuels for electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere.

Different GHGs have varying global warming potentials. Global warming potential is the effectiveness of a gas or aerosol to trap heat in the atmosphere. According to the United States (U.S.) Environmental Protection Agency (EPA), global warming potential is the “a measure of the total energy that a gas absorbs over a particular period of time (usually 100 years), compared to carbon dioxide.” The reference gas for global warming potential is CO₂; therefore, CO₂ has a global warming potential of one. The other main GHGs that have been attributed to human activity are CH₄ and N₂O. Table 4.7-1: Global Warming Potentials and Atmospheric Lifetimes of GHGs presents the global warming potential and atmospheric lifetimes of common GHGs.

Table 4.7-1: Global Warming Potentials and Atmospheric Lifetimes of GHGs

GHG	Formula	100-Year Global Warming Potential	Atmospheric Lifetime (years)
Carbon Dioxide	CO ₂	1	Variable
Methane	CH ₄	25	12
Nitrous Oxide	N ₂ O	298	114
Sulfur Hexafluoride	SF ₆	22,800	3,200

Source: U.S. EPA 2016b

In the California Greenhouse Gas Emission Inventory, the California Air Resources Board (CARB) compiled statewide anthropogenic GHG emissions and sinks, which include processes that uptake GHG emissions. The inventory includes estimates for CO₂, CH₄, N₂O, sulfur hexafluoride (SF₆), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs). The current inventory covers 1990 through 2014, and is summarized in Table 4.7-2: State of California Greenhouse Gas Emissions by Sector. Data sources used to calculate this GHG inventory include California and federal agencies, international organizations, and industry associations. Calculation methodologies applied are consistent with guidance from the Intergovernmental Panel on Climate Change. The presented emissions level is the sum total of sources and sinks from all sectors and categories in the inventory. The CARB’s original inventory was divided into seven broad sectors and categories, including agriculture, commercial, electricity generation, industrial, residential, and transportation. The latest inventory includes GHG emissions from recycling and waste management, high global warming potential gas emissions, and forestry sinks (i.e., reductions in GHG emissions related to forestry).

SF₆ Emissions

The use of SF₆ in power transformers and circuit breakers also poses a concern because of its extremely high global warming potential of 23,900. Within the electricity industry, emissions of SF₆ generally occur from losses through poor gas-handling practices during equipment installation, maintenance, and decommissioning, and leakage from SF₆-containing equipment.

Older equipment has been found to have a higher rate of SF₆ leakage, while new equipment has a low leak rate of approximately 0.1 percent annually, per industry standards. As described in Chapter 3 – Project Description, the Proposed Project will not involve the installation, removal, or replacement of any SF₆-containing equipment and SF₆ emissions are not discussed further in this analysis.

Table 4.7-2: State of California Greenhouse Gas Emissions by Sector

Sector	Total 2013 Emissions (MMTCO ₂ e)	Percent of Total 2013 Emissions	Total 2014 Emissions (MMTCO ₂ e)	Percent of Total 2014 Emissions
Agriculture	35.4	8.0	36.1	8.2
Commercial	21.6	4.9	21.6	4.9
Electricity Generation (In-State)	49.6	11.2	51.8	11.7
Electricity Generation (Imports)	40.2	9.1	36.6	8.3
Industrial	103.8	23.4	104.2	23.6
Residential	31.5	7.1	27.4	6.2
Transportation	161.5	36.3	163.0	36.9
Unspecified	0.8	<1.0	0.8	<1.0
Total	444.3	100	441.5	100

Sources: CARB 2016c

Note: MMTCO₂e = million metric tons of CO₂ equivalent (CO₂e)

Regulatory Background

Federal

Endangerment Finding

On April 17, 2009, the EPA issued its proposed endangerment finding for GHG emissions. On December 7, 2009, the EPA Administrator signed the following two distinct findings regarding GHGs under Section 202(a) of the Clean Air Act:

- **Endangerment Finding:** The EPA found that the current and projected concentrations of the six key, well-mixed GHGs—CO₂, CH₄, N₂O, SF₆, HFCs, and PFCs—in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The EPA found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to GHG pollution, which threatens public health and welfare.

The endangerment finding does not impose any requirements on industry or other entities. However, this action is a prerequisite to finalizing the EPA’s proposed GHG emissions standards for light-duty vehicles, which were jointly proposed by the EPA and the U.S. Department of Transportation’s National Highway Safety Administration on September 15, 2009.

Mandatory Reporting of Greenhouse Gases (Title 40, Part 98 of the Code of Federal Regulations)

The EPA’s rule titled Mandatory Reporting of Greenhouse Gases (Title 40, Part 98 of the Code of Federal Regulations) requires mandatory reporting of GHGs for certain facilities. Subpart DD of the rule, titled Electrical Transmission and Distribution Equipment Use, applies to SF₆ reporting from gas-insulated substations.

Under the final Mandatory Reporting Rule for Additional Sources of Fluorinated GHGs, owners and operators of electric power system facilities with a total nameplate capacity that exceeds 17,820 pounds (7,838 kilograms) of SF₆ and/or PFCs must report SF₆ and/or PFC emissions from the use of electrical transmission and distribution equipment. Owners or operators must collect emissions data; calculate GHG emissions; and follow the specified procedures for quality assurance, missing data, recordkeeping, and reporting.

The rule requires each electric power system facility operator to report the total SF₆ and PFC emissions (including emissions from equipment leaks, installation, servicing, decommissioning, and disposal, and from storage cylinders) from the following types of equipment:

- gas-insulated substations;
- circuit breakers;
- switchgears, including closed-pressure and hermetically sealed pressure switchgears;
- gas-insulated lines containing SF₆ or PFCs;
- gas containers, such as pressurized cylinders;
- gas carts;
- electric power transformers; and
- other containers of SF₆ or PFCs.

State

According to the U.S. EPA, the most common GHGs that result from human activity—as defined by Section 38505(g) of the California Health and Safety Code—include CO₂, CH₄, N₂O, SF₆, HFCs, or PFCs.

California Global Warming Solutions Act of 2006

In September 2006, Governor Schwarzenegger signed California Assembly Bill (AB) 32, the Global Warming Solutions Act, into law. AB 32 required that by January 1, 2008, CARB determine what the statewide GHG emissions level was in 1990, and approve a statewide GHG emissions limit that is equivalent to that level, to be achieved by 2020.

CARB adopted a comprehensive AB 32 Scoping Plan in December 2008 that outlined programs designed to achieve the 2020 GHG reduction goal of 174 million metric tons of CO₂e emissions through regulations, market mechanisms, and other actions. The California Public Utilities Commission (CPUC) and California Energy Commission (CEC) concluded a lengthy proceeding in October 2008 to provide electricity and natural gas-specific recommendations to CARB for inclusion in its Scoping Plan and AB 32 regulations and programs.

For the electricity sector, the Scoping Plan adopted the fundamental recommendations of the CPUC for investor-owned and publicly owned utilities to reduce GHG emissions. The investor-owned and publicly owned utilities must continue to pursue energy-efficiency programs, meet the goal of obtaining 33 percent of their electricity from renewable generation sources by 2020, and comply with a cap-and-trade program that seeks to reduce GHGs from electric generation and other sources.

Throughout 2009, CARB staff drafted rules to implement the AB 32 Scoping Plan and held public workshops on each measure included in the Scoping Plan. CARB identified “Discrete Early Actions” that would be implemented to reduce GHG emissions from the years 2007 through 2012. On January 29, 2009, CARB announced its regulatory schedule to adopt 74 separate regulations and other measures, including the enhanced energy efficiency programs and 33 percent Renewable Portfolio Standard. The early action measures identified within the Scoping Plan took effect on January 2010.

Assembly Bill 32 Scoping Plan Measure H-6

AB 32 Scoping Plan Measure H-6 led to CARB’s Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear (17 California Code of Regulations [CCR], Sections 95350 – 95359). CARB’s SF₆ regulation sets the maximum emission rate for SF₆-containing equipment at 10 percent by 2011. The maximum allowable emission rate decreases by one percent each year. In 2020, the threshold will remain at one percent.

Senate Bill 97

Senate Bill 97, enacted in 2007, amends the California Environmental Quality Act (CEQA) to state that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. The new regulations became effective as part of the CEQA Guidelines on March 18, 2010.

Section 15064.4 of the CEQA Guidelines specifically addresses the potential significance of GHG emissions. Section 15064.4 calls for a “good-faith effort” to “describe, calculate or estimate” GHG emissions. Section 15064.4 states that the analysis of GHG impacts should consider the extent to which the Proposed Project would increase or reduce GHG emissions; exceed a locally applicable threshold of significance; and comply with “regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions.”

Section 15064(h)(3) of the CEQA Guidelines states that a project may be found to have a less-than-significant impact related to GHG emissions if it complies with an adopted plan that includes measures to reduce GHG emissions. The CEQA Guidelines do not require or recommend a specific analytical methodology or set a quantitative threshold for determining the significance of GHG emissions. The California Supreme Court provided additional guidance in its decision for the Newhall Ranch case on November 30, 2015. The Court upheld methodology of determining significance of emissions by comparing them to reductions from “business as usual” required to reduce emissions to 1990 levels by 2020, as required by AB 32 and based on CARB’s methodology in its 2008 Climate Scoping Plan. However, the Court did not uphold comparing the overall statewide target of 29 percent reduction from the business as usual case to

a specific project without adjustment by considering the impacts of a specific project in a specific location. Lead agencies can also apply specific numerical thresholds developed by some local agencies or demonstrate compliance with locally adopted plans.

Senate Bill 375

Senate Bill 375, enacted in 2009, requires the CARB to develop regional reduction targets for GHGs, and prompts the creation of regional plans to reduce emissions from vehicle use throughout the state. California's 18 Metropolitan Planning Organizations (MPOs) have been tasked with creating Sustainable Community Strategies (SCSs). The MPOs must develop the SCSs through integrated land use and transportation planning, and demonstrate an ability to attain the proposed reduction targets by 2020 and 2035. The MPO for the Proposed Project region is the Southern California Association of Governments (SCAG). On April 4, 2012, the regional Council of SCAG adopted the 2012-2035 Regional Transportation Plan/SCS.

Executive Order S-3-05

Executive Order S-3-05, signed by Governor Schwarzenegger on June 1, 2005, calls for a reduction in GHG emissions to 1990 levels by 2020 and for an 80 percent reduction in GHG emissions by 2050. Executive Order S-3-05 also calls for the California Environmental Protection Agency to prepare biennial science reports on the potential impact of continued global climate change on certain sectors of the California economy.

State Standards Addressing Vehicular Emissions

California Assembly Bill 1493 (Pavley), enacted on July 22, 2002, required the CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light-duty trucks. The CARB has adopted amendments to the Pavley regulations that reduce GHG emissions in new passenger vehicles from 2009 through 2016.

Executive Order S-21-09

Executive Order S-21-09 was enacted on September 15, 2009. Executive Order S-21-09 requires that the CARB, under its AB 32 authority, adopt a regulation by July 31, 2010 that sets a 33-percent renewable energy target, as established in Executive Order S-14-08. Under Executive Order S-21-09, the CARB will work with the CPUC and CEC to encourage the creation and use of renewable energy sources, and will regulate all California utilities.

The CARB will also consult with the California Independent System Operator and other load-balancing authorities on the impacts on reliability, renewable integration requirements, and interactions with wholesale power markets in carrying out the provisions of the Executive Order. The order requires the CARB to establish highest priority for those resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health.

Senate Bills 1078 and 107 and Executive Order S-14-08

Senate Bill 1078 requires retail sellers of electricity to provide at least 20 percent of their supply from renewable sources by 2017. Senate Bill 107 changed the target date to 2010. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the Renewables Energy Standard to 33 percent by 2020. In April 2011, the California legislature

enacted Senate Bill X1-2, which mandates the Renewables Portfolio Standard of 33 percent by 2020 for investor-owned and publicly owned utilities.

Executive Order B-30-15

Executive Order B-30-15 was signed by Governor Brown in April 2015. It established an interim target to those established in Executive Order S-3-05 of reducing GHG emissions to 40 percent below 1990 levels by 2030.

Local

The Proposed Project is not subject to local discretionary regulations because the CPUC has exclusive jurisdiction over the siting, design, and construction of the Proposed Project. The following discussion of the local regulations relating to GHG emissions is provided for informational purposes. As outlined in the following subsections, the construction and operation of the Proposed Project will not conflict with any environmental plans, policies, or regulations adopted by agencies with jurisdiction over local regulations related to GHG emissions.

City of San Diego

In December 2015, the City of San Diego released its adopted Climate Action Plan, which identifies measures to effectively meet GHG reduction targets for 2020 and 2035. This plan was developed in response to the mitigation required as part of the 2008 General Plan and will also serve as a Qualified GHG Reduction Plan through 2020. In March 2013, the City of San Diego Development Services Department released draft GHG significance thresholds. As per the draft guidelines, and similar to the County of San Diego, the Bright Line Threshold (i.e., 2,500 metric tons [MT] of CO_{2e} per year) may be used for all land use development projects other than stationary sources. When using the Bright Line Threshold, projects do not need to add construction emissions, as they were already included in the development of the threshold.

City of Del Mar

In June 2016, the City of Del Mar adopted a Climate Action Plan, which sets targets for reducing GHG emissions by 2020 and 2035. This plan was developed to meet California's goal of reducing GHG emissions to 1990 levels by 2020. The Climate Action Plan's goal for 2035 is to reduce GHG generation to at least 50 percent below Del Mar's baseline 2012 values and to continue further reductions to meet the state goal of 80-percent reduction below statewide 1990 values by 2050.

San Diego Association of Governments' 2014 Regional Energy Strategy

The 2014 Regional Energy Strategy is an energy policy guide used to support decision-making by the San Diego Association of Governments and its member agencies through 2050 with the goal of assisting the San Diego region in meeting the energy needs of a growing population, housing stock, and workforce, while maintaining and enhancing regional quality of life and economic stability. To accomplish these objectives, the Regional Energy Strategy calls for increased use of natural gas for certain transportation applications and the continued efficient use of electricity generation. A more detailed discussion of the strategy is provided in Section 4.3 Air Quality.

San Diego Gas & Electric Company Programs

SDG&E has been engaged for many years in activities to reduce GHG emissions. These activities include programs to increase energy efficiency and efforts to meet the RPS of 33 percent of its supply from renewable sources by 2020. In 2011, approximately 20.8 percent of SDG&E’s retail sales were from renewable energy sources.

SDG&E submits a mandatory Long-Term Procurement Plan (LTPP) to the CPUC that describes its strategy for meeting the forecasted load during the next 10 years. The LTPP must be consistent with the “loading order” prescribed in the Energy Action Plan to meet growth first with conservation, then with renewable sources of electricity, and finally with new fossil fuel sources to the extent necessary. New generation sources must be consistent with the LTPP. The CPUC approved SDG&E’s most recent LTPP in September 2008.

The LTPP includes the following programs to reduce GHG emissions:

- energy efficiency, which will reduce needed capacity by 487 megawatts (MW) by 2016;
- demand response, which will reduce needed capacity by 249 MW by 2016;
- renewables, which will provide 318 MW in 2010 and 727 MW in 2016; and
- new peaker plants to back up intermittent renewables and support retirement of older plants.

Forecasted reductions from these programs are greater than 1.5 MMTCO₂e per year. These efforts will reduce carbon intensity by one-third while accommodating continued population growth, and will ensure consistency with the applicable plans, policies, and regulations adopted by California to reduce GHG emissions.

4.7.3 Impacts

Significance Criteria

The Office of Planning and Research (OPR) is the state-wide, comprehensive planning agency that is responsible for making policy recommendations and coordinating land use planning efforts. The OPR also coordinates the state-level review of environmental documents pursuant to CEQA. The OPR’s stance on GHG significance thresholds has been to allow each lead agency to determine their own level of significance. OPR issued a Technical Advisory recommending an approach to evaluating GHGs in CEQA documents, and is currently developing amendments to the CEQA Guidelines concerning GHG emission assessments. CEQA Guideline Section 15064.4 provides:

- b) A lead agency should consider the following factors, among others, when assessing the significance of impacts from greenhouse gas emissions on the environment:*
 - 1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;*
 - 2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project;*

- 3) *The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions.*

The San Diego County Air Pollution Control District has not established GHG thresholds under CEQA. The SCAQMD has adopted and the County of San Diego Planning & Development Services has issued a significance threshold of 10,000 MTCO₂e emissions annually for industrial sources, and an industrial project will not generate GHG emissions that will have a significant impact on the environment if the emissions are below this significance threshold. The SCAQMD and the County of San Diego recommend amortizing construction emissions over a 30-year period to account for their contribution to GHG emissions over the lifetime of the Proposed Project.

Question 4.7a – Greenhouse Gas Emissions

Construction – Less-than-Significant Impact

The main source of GHG emissions associated with the Proposed Project will be fossil fuel combustion during construction. GHG emissions for construction were calculated using the same approach as criteria pollutant emissions for overall construction emissions. Estimated GHG emissions are summarized in Table 4.7-3: Greenhouse Gas Construction Emissions.

Table 4.7-3: Greenhouse Gas Construction Emissions

Category	GHG Emissions (MT)		
	CO ₂	CH ₄	N ₂ O
Total Construction Emissions	899.66	0.16	0.00
Global Warming Potential	1	21	310
CO ₂ e	899.66	3.44	0.00
Total CO ₂ e	903.10		
Amortized Construction Emissions (Amortized over 30 Years)	30.10		

The SCAQMD has adopted and the County of San Diego Planning & Development Services has issued a significance threshold of 10,000 MTCO₂e emissions annually for industrial sources. The Proposed Project’s total annualized construction CO₂e emissions of 30.10 MT will be below the significance threshold of 10,000 MTCO₂e emissions annually. Therefore, this level of GHG emissions will be less than significant.

Operation and Maintenance – No Impact

Once construction of the Proposed Project has been completed, emissions will be relatively low, resulting only from scheduled O&M activities. These activities will be conducted in the same manner as they were prior to construction of the Proposed Project. As described in Chapter 3 – Project Description, the proposed underground duct banks within Via De La Valle will be installed parallel to existing facilities where O&M activities are currently being conducted. The

removal of approximately six miles of 69 kilovolt power lines from TL666D will eliminate all future O&M activities associated with these facilities. The conversion of C510 and C738 will eliminate O&M requirements associated with approximately 4,530 feet of existing overhead distribution line. Although these conversions will introduce approximately 4,230 feet of new underground duct bank, SDG&E currently owns and operates existing underground distribution facilities in the vicinity of these Proposed Project components. Based on the removal of existing overhead facilities and the installation of Proposed Project components in areas already covered by existing O&M activities, post-construction O&M requirements in the Proposed Project area will be reduced. Therefore, these activities will not generate an increase in GHG emissions when compared to their current levels, and no impact will occur.

Question 4.7b – Applicable Greenhouse Gas Plan Conflicts

Construction – No Impact

The Proposed Project's GHG emissions from construction will be below the significance threshold when amortized over a 30-year period, as recommended by the SCAQMD and the County of San Diego. Equipment and vehicles supporting construction of the Proposed Project will comply with the requirements implemented by the CARB to reduce GHG emissions and will be consistent with AB 32's goals. Accordingly, there will be no impact associated with construction.

Operation and Maintenance – No Impact

As described in the response to Question 4.7a, O&M emissions will be reduced as a result of construction of the Proposed Project; therefore, the Proposed Project will not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Accordingly, there will be no impact.

4.7.4 Applicant-Proposed Measures

The Proposed Project has no potentially significant impacts related to GHGs; therefore, no applicant-proposed measures are proposed.

4.7.5 References

California Air Pollution Control Officers Association. 2015. CalEEMod. Online. <http://caleemod.com/>. Site visited October 21, 2016.

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