5.0 AIR QUALITY

5.1 INTRODUCTION

This chapter describes the existing air quality within Pacific Gas and Electric Company's Windsor Substation Project area and evaluates the potential air quality impacts and potential greenhouse gas (GHG) emissions associated with project construction and operation. Although short-term emissions from project construction will result in some temporary impacts, the project will result in a less than significant impact to air quality and GHG emissions. The project will not cause any objectionable odors, expose sensitive receptors to increased pollutant concentrations, or otherwise significantly affect air quality.

5.2 METHODOLOGY

Methodologies detailed in the Bay Area Air Quality Management District (BAAQMD) California Environmental Quality Act (CEQA) Guidelines were used to calculate emissions and determine thresholds of significance for air quality impacts. Construction emissions were estimated using construction equipment emission factors from URBEMIS 2007 (version 9.2.4) and truck emission factors from EMFAC2007 (version 2.3). Documentation of the inputs to and results from the construction analysis are included in Attachment B. The potential impact of project construction activities on air quality is based on a best-estimate scenario using projections of the numbers and types of equipment that will be used during project construction. Operations emissions estimates calculations are included in Attachment C.

5.3 REGULATORY BACKGROUND

5.3.1 Federal Programs

5.3.1.1 Clean Air Act (CAA)

National ambient air quality standards were established in 1970 for six pollutants: carbon monoxide (CO), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), nitrogen dioxide (NO_2), sulfur dioxide ($SO_{2)}$, and lead (Pb). These pollutants are commonly referred to as criteria pollutants, because they are considered the most prevalent air pollutants known to be hazardous to human health. The CAA required states exceeding the standards to prepare air quality plans showing how the standards were to be met by December 1987. The CAA Amendments of 1990 directed the U.S. Environmental Protection Agency (USEPA) to set standards for toxic air contaminants and required facilities to sharply reduce emissions.

5.3.1.2 Federal Regulations Limiting Greenhouse Gas Emissions

Currently, there are no promulgated federal regulations limiting greenhouse gas (GHG) emissions. On September 22, 2009, the Administrator of the USEPA signed the Final Rule (Rule) for the Mandatory Reporting of Greenhouse Gas. The Rule was published in the Federal Register on October 30, 2009 and went into effect on December 29, 2009. The Rule requires that suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines,

and facilities that emit more than 25,000 metric tons or more per year of GHG emissions submit annual reports to the USEPA.

5.3.2 State Programs

5.3.2.1 The California Clean Air Act

The California CAA requires regions to develop and implement strategies to attain California's Ambient Air Quality Standards (AAQS). For some pollutants, the California standards are more stringent than the national standards. California specifies four additional criteria pollutants: visibility reducing particles (VRP), sulfates, hydrogen sulfide (H_2S) and vinyl chloride. Regional air quality management districts, including the BAAQMD, must prepare an air quality plan specifying how federal and state standards will be met.

5.3.2.2 The Air Toxics "Hot Spots" Information and Assessment Act

The Air Toxic "Hot Spots" Information and Assessment Act identifies toxic air contaminant hot spots where emissions from specific sources may expose individuals to an elevated risk of adverse health effects. It requires that a business or other establishment identified as a significant source of toxic emissions provide the affected population with information about health risks posed by the emissions.

5.3.2.3 Executive Order S-3-05 Greenhouse Gas Emissions Reductions Targets

Executive Order S-3-05 establishes GHG reductions targets for the state of California. Targets call for a reduction of GHG emissions to 2000 levels by 2010, a reduction of GHG emissions to 1990 levels by 2020, and a reduction of GHG emissions to 80 percent below 1990 levels by 2050. The Secretary of the California Environmental Protection Agency will coordinate development and implementation of strategies to achieve the GHG reduction targets.

5.3.2.4 Assembly Bill 32 – The Global Warming Solutions Act of 2006

Assembly Bill 32 (AB-32) codifies a comprehensive program of regulatory and market mechanisms to achieve specific reductions of GHG emissions in California. It designates the California Air Resources Board (CARB) of the EPA as responsible for monitoring and reducing GHG emissions. A Scoping Plan which identifies the mechanisms for achieving the target reductions was approved on December 11, 2008. The measures identified must be adopted through the normal rulemaking process.

5.3.2.5 Senate Bill 97 Chapter 185 Statues of 2007

Senate Bill 97 requires that the Office of Planning and Research (OPR) prepare guidelines regarding the feasible mitigation of GHG emissions or the effects of GHG emissions as required by CEQA. On April 13, 2009, OPR submitted to the Secretary for Natural Resources its proposed amendments to the state CEQA Guidelines for greenhouse gas emissions. The California Resources Agency (Agency) was required to certify and adopt these revisions to the State CEQA Guidelines by January 1, 2010. On December 31, 2009, the Agency delivered its rulemaking package to the Office of Administrative Law for their review pursuant to the

Administrative Procedure Act. The Adopted Amendments will not become effective until after the Office of Administrative Law completes its review of the Adopted Amendments and rulemaking file, and transmits the Adopted Amendments to the Secretary of State for inclusion in the California Code of Regulations. The Guidelines will apply retroactively to any incomplete environmental impact report, negative declaration, mitigated negative declaration, or other related document.

5.3.3 Local Plans and Programs

5.3.3.1 Bay Area Air Quality Management District Air Quality Plans

The BAAQMD periodically prepares and updates plans to achieve ambient air quality goals. These plans usually include measures to reduce air pollution emissions from industrial, area, mobile and other sources. In 2001, the Ozone Attainment Plan was prepared for the Bay Area as part of the State Implementation Plan to achieve the National Ozone Standard. Later in 2005, the Bay Area Ozone Strategy was prepared to detail how the BAAQMD will achieve the State 1-hour ozone standard. In addition, the BAAQMD adopted in 2005 an implementation schedule for state-proposed measures for reducing airborne particulate matter.

In 2005, the BAAQMD initiated a Climate Protection Program (Program). This Program emphasizes the link between climate protection and existing programs to reduce local air pollution. A major accomplishment of this Program is the production of a District GHG Inventory for base year 2002, with an update for base year 2007.

5.4 EXISTING CONDITIONS

The project site is located in the Santa Rosa Valley. Average annual wind speeds in Santa Rosa are approximately 5 miles per hour. In the immediate area, average summer temperatures peak in the low 80s Fahrenheit (F) and drop to the low 50s F, while average winter temperatures peak in the low 60s F and drop to the upper 30s F. Approximately 80 percent of annual rainfall in this area occurs during the period of November through March. Due to the Valley's configuration, air pollutants may become concentrated during stagnant conditions. This could occur during periods of diurnal heating with low marine airflow through the Petaluma Gap. This situation could be aggravated by diurnal up-valley flow of warm air from the Petaluma valley becoming trapped against the mountains to the north and east.

5.4.1 Air Quality

The project lies within the San Francisco Bay Air Basin (SFBAB), a region that extends from Sonoma and Napa Counties in the north to Santa Clara County in the south and includes all other counties bordering the San Francisco, San Pablo and Suisun Bays. The BAAQMD is the State regulatory body responsible for air quality related activities in the SFBAB. Three air quality designations can be given to an area for a particular pollutant:

- **Non-attainment:** This designation applies when air quality standards have not been consistently achieved.

- **Attainment:** This designation applies when air quality standards have been achieved.
- **Unclassified:** This designation applies when there are not enough monitoring data to determine if the area is non-attainment or attainment.

According to the CARB AAQS, the SFBAB is designated non-attainment for O_3, $PM_{2.5}$ and PM_{10}. These pollutants are discussed in more detail in the following sections. The SFBAB is designated attainment or unclassified for NO_2, SO_2, CO, H_2S, sulfate particulates, VRP, and Pb particulates. By federal standards, the SFBAB is designated as unclassified or attainment for all criteria pollutants, with the exception of O_3 and $PM_{2.5}$. The SFBAB is unclassified for the federal 24-hour PM_{10} standard. Table 5-1 provides the California and federal air quality standards and attainment status. Currently, the federal government, the State of California, and the BAAQMD do not designate attainment statuses for ambient GHG concentrations.

5.4.1.1 Ozone

Air quality in the SFBAB with respect to O_3 has improved since 1998. With the exception of 2006 and 2008[1], the number of exceedances of the state and federal standards has shown a generally declining trend. These exceedances are generally attributed to unique meteorological patterns, combined with increases in O_3 precursor emissions during the summer months. Vehicular emissions, industrial emissions, and high ambient temperatures in urban areas of the SFBAB contribute to summertime O_3 generation and subsequent air standard violations. This was especially pronounced in 2006 and 2008, when calm conditions and high temperatures in the East Bay and Santa Clara Valley produced unusually high and persistent O_3 concentrations.

In Sonoma County the state one-hour standard for O_3 has been exceeded twice since 1998; as shown in Table 5-2. Peak hourly average O_3 concentrations ranged from 0.070 to 0.100 parts per million (ppm) during this time. Table 5-3 presents data from the BAAQMD air monitoring station located on 5th Street in Santa Rosa. This station, the only monitoring station within BAAQMD jurisdiction in Sonoma County, provides data that is most representative of the project area. The Santa Rosa station is located just south of Windsor in the Cotati Valley, and experiences similar atmospheric conditions to those found in Windsor.

[1] In 2006, calm conditions and high ambient temperatures in the East Bay and Santa Clara Valley produced unusually high and persistent O_3 concentrations.

Table 5-1: Bay Area Air Quality Management District
Attainment Status as of December 2008

Pollutant	Averaging Time	California Standards		Federal Standards	
		Concentration	Attainment Status	Concentration	Attainment Status
Ozone	8 Hour	0.07 ppm	N	0.075 ppm	N
	1 Hour	0.09 ppm	N	---	---
Carbon Monoxide	8 Hour	9.0 ppm	A	9 ppm	A
	1 Hour	20.0 ppm	A	35 ppm	A
Nitrogen Dioxide	Annual Arithmetic Mean	0.030 ppm		0.053 ppm	A
	1 Hour	0.18 ppm	A	---	---
Particulate Matter (PM_{10})	Annual Arithmetic Mean	20.0 $\mu g/m^3$	N	---	---
	24 Hour	50.0 $\mu g/m^3$	N	150 $\mu g/m^3$	U
Sulfur Dioxide	Annual Arithmetic Mean	---	---	0.030 ppm	A
	24 Hour	0.04 ppm	A	0.14 ppm	A
	1 Hour	0.25 ppm	A		
Lead	30 Day Average	1.5 $\mu g/m^3$	A	---	---
	Calendar Quarter	---	---	1.5 $\mu g/m^3$	A
$PM_{2.5}$	Annual Arithmetic Mean	12 $\mu g/m^3$	N	15 $\mu g/m^3$	A
	24 Hour	---	---	35 $\mu g/m^3$	N

Source: BAAQMD-Ambient Air Quality Standards and Bay Area Attainment Status, 2008.

Units

$PM_{2.5}$	Particulate matter with a diameter less than or equal to 2.5 microns
ppm	Parts per million
$\mu g/m^3$	Micrograms per cubic meter of air
N	Non-attainment
A	Attainment
U	Unclassified
---	Not Applicable

Table 5-2: Sonoma County Exceedances of the State Ambient Air Quality Standards Between 1998 and 2008

Year	Ozone (1-hour)[1]		Ozone (8-hr)[2]		PM_{10}[3]	
	Number of Exceedance Days	Maximum Hour Concentration (ppm)	Number of Exceedance Days	Maximum Hour Concentration (ppm)	Number of Exceedance Days	Maximum 24-Hour Concentration ($\mu g/m^3$)
1998	0	0.068	--	--	6	--
1999	1	0.095	--	--	6	54
2000	0	0.078	--	--	0	46
2001	0	0.086	--	--	18	78
2002	0	0.077	--	--	122	64
2003	1	0.096	--	--	0	36
2004	0	0.076	--	--	0	48
2005	0	0.072	0	0.051	0	39
2006	0	0.077	0	0.058	12	90
2007	0	0.071	0	0.059	0	37
2008	0	0.076	0	0.065	*	50

Source: BAAQMD - Bay Area Air Pollution Summary, 1998-2007; CARB ADAM Air Quality Data Statistics.

[1] The sampling frequency of ozone is continuous (hourly). The state AAQS for ozone is 0.09 ppm.

[2] The state eight-hour AAQS for ozone is 0.070 ppm.

[3] Sampling of particulate matter (PM_{10}) is scheduled throughout California once every sixth day (a 24-hour sample). Therefore, each station has a nominal 60 to 61 sampling days per year. All stations have the same schedule; that is, they all attempt to sample for PM_{10} on the same days. The number of station-sampling days per county is dependent the number of PM_{10} stations in the county. The state AAQS for PM_{10} is 50 micrograms per meter of air ($\mu g/m$).

Table 5-3: Santa Rosa 5th Street Air-Monitoring Station Annual Air Quality Measurements Between 1998 and 2008

Year	Ozone		$PM_{2.5}$		PM_{10}	
	Maximum 8-Hour Overlap Concentration (ppm)	Maximum 1-Hour Concentration (ppm)	Annual Arithmetic Mean ($\mu g/m^3$)	Maximum 24-Hour Concentration ($\mu g/m^3$)	Annual Arithmetic Mean ($\mu g/m^3$)	Maximum 24-Hour Concentration ($\mu g/m^3$)
1998	0.055	0.068	--	--	--	56.1
1999	0.077	0.095	--	54.9	--	57.1
2000	0.057	0.078	10.5	40.1	18.2	48.4
2001	0.063	0.086	10.8	75.9	21.9	78.1
2002	0.061	0.077	--	50.7	20.4	63.6
2003	0.080	0.096	8.7	38.8	16.9	36.3
2004	0.061	0.076	8.3	26.6	18.0	48.1
2005	0.051	0.072	7.6	33.6	15.9	38.9
2006	0.058	0.077	9.2	59.0	18.8	89.5
2007	0.060	0.071	7.6	32.0	17.1	37.2
2008	0.065	0.076	8.6	30.8	*	49.9

Source: California Air Resources Board – Air Quality Data Statistics, 2008.

5.4.1.2 Particulate Matter (PM_{10} and $PM_{2.5}$)

Air quality in the SFBAB with respect to PM_{10} has remained relatively constant since 1998. The maximum 24-hour concentrations of PM_{10} and the number of exceedances of the state 24-hour standard have remained relatively stable. PM_{10} is generated within the project area largely as a result of wind during dry conditions (resulting in fugitive dust) and combustion sources.

Between 1998 and 2008, the maximum 24-hour PM_{10} concentration within Sonoma County was 90 micrograms per cubic meter of air ($\mu g/m^3$), which was reached in 2006. The total number of violations of the PM_{10} state air quality standards (over 50 $\mu g/m^3$) in Sonoma County between 1998 and 2008 was 54.

Air quality in Santa Rosa with respect to $PM_{2.5}$ has remained relatively constant since 2000. The maximum 24-hour concentration of $PM_{2.5}$ has remained relatively stable, ranging from 75.9 to 26.6 ppm. The annual arithmetic mean has ranged from 10.8 to 7.6 ppm. $PM_{2.5}$ is generated within the project area largely from combustion sources.

5.4.1.3 Greenhouse Gases

GHG emissions are not currently regulated in the BAAQMD. For potential regulatory action, GHGs are generally defined as: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6). GHG emissions are generally expressed in units of carbon dioxide equivalent (CO_2e). Concentrations of the gases are converted into CO_2e according to their global warming potential ($CO_2 = 1$).

GHG 2007 emission estimates for Sonoma County are shown in Table 5-4.

Table 5-4: 2007 Sonoma County* Greenhouse Gas Emissions Estimate

Source Category	Total Emissions (metric tons per year)		
	GHG Emissions	**Percent of Total**	**Notes**
Transportation	2,104,520	51	On- and Off-Road
Residential Fuel Usage	406,377	10	Natural Gas, Liquid Fuel, Solid Fuel
Electricity / Cogeneration	579,541	14	Cogeneration, Generation, Imports
Industrial / Commercial	640,862	15	Waste Management, Engines, Other Combustion Sources, etc.
Off-Road Equipment	175,285	5	Residential, Construction, Industrial, Commercial
Agriculture / Farming	213,671	5	Equipment, Waste, Soil Management, Burning
Total	**4,120,255**	**100**	

Source: BAAQMD – Source Inventory of Bay Area Greenhouse Gas Emissions - 2007

*BAAQMD Jurisdiction Only.

5.5 IMPACTS

5.5.1 Significance Criteria

The BAAQMD CEQA Guidelines cite standards of significance derived from Appendix G of the State OPR CEQA Guidelines. Impacts to air quality may be considered significant if they:

- conflict with or obstruct implementation of the applicable air quality plan,
- violate any air quality standard or contribute substantially to an existing or projected air quality violation,
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state AAQS,
- create a potential public health hazard or involve the use, production or disposal of materials which pose a hazard to people or plant or animal populations in the area affected,
- expose sensitive receptors to substantial pollutant concentration,
- create objectionable odors affecting a substantial number of people, and/or
- alter air movement, moisture or temperature, or change in climate, either locally or regionally.

In addition, a project is considered to be significant at the state, regional, or area level if it interferes with the attainment or maintenance of state or national AAQS.

The CEQA Guidelines do not specifically describe what thresholds of significance should be or how they may be used. Appendix G of the CEQA Guidelines lists a variety of potentially significant effects, but does not provide a means of judging whether they are indeed significant. The lead agency governing air quality standards in the project area, in this case the BAAQMD, is responsible for determining whether the effects of a project are below the levels of significance to the environment.

5.5.1.1 Greenhouse Gases

On December 31, 2009, the California Resources Agency delivered its rulemaking package to the Office of Administrative Law for its review pursuant to the Administrative Procedure Act. The Adopted Amendments will not become effective until after the Office of Administrative Law completes its review of the Adopted Amendments and rulemaking file, and transmits the Adopted Amendments to the Secretary of State for inclusion in the California Code of Regulations. CARB staff has developed state-wide interim thresholds of significance for GHGs that may be adopted by local agencies for their own use. The interim guidance divides projects analyzed under CEQA into two categories, industrial and residential/commercial, and provides significance criteria for each. For industrial projects, such as this project, CARB proposed a quantitative significance threshold of 7,000 metric tons CO_2 equivalent (MTCO2e/yr) per year from operation of non-transportation-related GHG sources.

At this time, the BAAQMD does not address significance criteria for impacts from greenhouse gas emissions in its CEQA Air Quality Guidelines.

5.5.2 Construction

5.5.2.1 Temporary Impacts

Particulate matter (PM_{10} and $PM_{2.5}$) is the primary air pollutant resulting from construction activities. In addition to particulate matter, there are pollutants associated with equipment usage and with vehicular emissions from transporting workers, equipment, and supplies. GHG emissions will also result from the burning of fuel required to operate the on-site construction equipment and vehicle use during construction activities.

The BAAQMD CEQA Air Quality Guidelines state that the District's approach to CEQA analysis of construction impacts is to emphasize implementation of effective and comprehensive control measures, rather than detailed quantification of emissions.

The District has identified a set of feasible PM_{10} control measures for construction activities. These control measures fall into three categories: Basic, Enhanced, and Optional. The Basic control measures, if implemented for a project of less than four acres, are sufficient to render construction phase impacts less than significant. As the proposed project area is 3.2 acres, Basic control measures will be utilized, as listed below:

- Water all active construction areas at least twice daily during dry conditions
- Cover all trucks hauling dirt, sand, or loose materials, or require all trucks to maintain at least two feet of freeboard
- Pave, apply water as necessary to prevent fugitive dust, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites
- Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets

These measures will be implemented during the construction phase of the project, rendering the air quality impact from PM_{10} insignificant.

The equipment used during the project construction phase emits O_3 precursors and CO. These emissions are accommodated in the emissions inventories of state and federally-mandated air quality plans and will not have a significant impact on the attainment and maintenance of CO or O_3 ambient air quality standards.

Construction-phase unmitigated emissions of CO_2 were estimated using emissions factors from URBEMIS 9.2.4 and EMFAC2007 Ver2.3.A total emissions rate of 53.0 $MTCO_2$/yr is estimated for 2011 and 86.8 $MTCO_2$/yr is estimated for 2012. Incorporation of the APMs listed in Section 5.6 will further reduce emissions from construction to approximately 45.0 metric tons per year in 2011, and 73.8 metric tons per year in 2012. The emissions from the construction phase of the project are below CARB's proposed threshold of 7,000 $MTCO_2e$/yr.

The construction phase of the project will not cause any objectionable odors, expose sensitive receptors to increased pollutant concentrations, conflict with any air quality plans or standards, or otherwise significantly affect air quality.

5.5.2.2 Permanent Impacts

No permanent impacts to air quality from the project construction phase are anticipated.

5.5.3 Operations and Maintenance

5.5.3.1 Vehicle Emissions During Project Operation

The BAAQMD has published thresholds of significance for project environmental impacts. For air quality impacts, it states that a project's air emissions are significant if they:

- emit more than 80 pounds per day of reactive organic gases (ROG)
- emit more than 80 pounds per day of nitrogen oxides (NO_x)
- emit more than 80 pounds per day of PM_{10}
- emit more than 550 pounds per day of CO (direct emissions)
- frequently expose members of the general public to objectionable odors
- have the potential to expose sensitive receptors (including the general public) to substantial levels of toxic air contaminants

Operation of the project will not result in any criteria pollutants, ROG, objectionable odors, or toxics being emitted into the air. Once construction is complete, there will be negligible impacts resulting from equipment periodically used in operation and maintenance of the facilities. Project air emissions will come mainly from vehicular emissions from maintenance and monitoring activities. Since the substation is unmanned, there will be no vehicular emissions associated with regular commuting to and from the substation. As shown in Table 5-5, using an estimated total of 250 vehicle miles a month (both light-duty and heavy-duty trucks) for substation maintenance and repairs, the total emissions during operations will be considerably less than the 80 pounds per day maximum for ROG, CO, NO_x, SO_2, and PM_{10}. Impacts from the operational phase of the project will be insignificant.

5.5.3.2 Greenhouse Gas Emissions

Other than emissions from vehicle sources discussed above, SF_6 is the only potential emission that may occur from operation of the substation. SF_6 is a non-hazardous, inert gas that is used as both an arc-quenching and insulting medium in high-voltage switchgear, circuit breakers, and gas-insulated substations. It is the best circuit breaker electrical insulation medium available under current technology.

For the project, PG&E will install new SF_6 breaker designs that focus on reducing the chance of SF_6 leaks. These state-of-the-art circuit breakers are designed and guaranteed to have an annual leak rate of one-half of one percent or less. In contrast, only ten years ago, PG&E's system-wide circuit breaker population had an average annual leak rate of over 12 percent. PG&E has aggressively replaced older SF_6 breakers to reduce leak rates and the amount of SF_6 per breaker.

PG&E's system-wide average of SF_6 per breaker is currently 175 pounds compared to 210 pounds ten years ago.

GHG emissions from the operations phase of the project are detailed in Table 5-6. The worst-case scenario emissions from the operations phase of the project are below CARB's proposed threshold of 7,000 $MTCO_2e$/yr.

Table 5-5: Operations Emissions Estimates
BAAQMD Manual Calculation Method

Activity and Equipment	Emissions (pounds per day)				
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**
Light-Duty Truck (200 miles per month)	0.005	0.082	0.013	<0.001	0.006
Heavy-Duty Truck (50 miles per month)	0.003	0.042	0.005	<0.001	0.002
Substation Operations Total (Pounds/Day)	**0.008**	**0.124**	**0.018**	**<0.001**	**0.008**

Emissions

ROG	Reactive organic gas
CO	Carbon monoxide
NO_x	Nitrogen oxides
PM_{10}	Fugitive dust
SO_2	Sulfur dioxide

Table 5-6: Operations Greenhouse Gas Emissions Estimates

Activity and Equipment	Emissions (metric tons/year CO_2e)			
	CO_2	CH_4	N_2O	SF_6
SF_6 Process Loss	--	--	--	9.95
Light-Duty Truck (200 miles per month)	1.42	0.001	0.008	--
Heavy-Duty Truck (50 miles per month)	0.91	0.001	0.003	--
Substation Operations Total	**2.33**	**0.002**	**0.011**	**9.95**

5.6 AVOIDANCE AND PROTECTION MEASURES

5.6.1 Construction

As discussed in Section 5.5.2.1, with adoption of the Bay Area Air Quality Management District-recommended mitigation measures, air quality impacts associated with construction of the substation will be less than significant.

Regarding GHG impacts, although construction impacts are less than significant, PG&E will implement the following GHG reduction measures:

- Encourage construction workers to carpool to the job site to the extent feasible. The ability to develop an effective carpool program for the project will depend upon the proximity of carpool facilities to the area, the geographical commute departure points of construction workers, and the extent to which carpooling will not adversely affect worker arrival time and the project's construction schedule.

- Minimize unnecessary idling time – less than 5-minute maximum idling required by law - through application of a "common sense" approach to vehicle use—if a vehicle is not required immediately or continuously for construction activities, its engine will be shut off. Construction foremen will include briefings to crews on vehicle use as part of pre-construction conferences. Those briefings will include discussion of a "common sense" approach to vehicle use.

- Minimize welding and cutting by using compression of mechanical applications where practical and within standards.

- Encourage use of natural gas powered vehicles for passenger cars and light duty trucks where feasible and available.

- Encourage the recycling of construction waste where feasible.

- Minimize construction equipment exhaust by using low-emission construction equipment where feasible. Portable diesel fueled construction equipment with engines 50 hp or larger and manufactured in 2000 or later will be registered under the California Air Resources Board (CARB) Statewide Portable Equipment Registration Program, or shall meet at a minimum USEPA/CARB Tier 1 engine standards.

As discussed in Section 5.5.2.1, implementation of the proposed avoidance and protection measures will further reduce less-than-significant construction-phase emissions of CO_2.

5.6.2 Operations and Maintenance

There will be no significant impacts to air quality due to the operations and maintenance of the substation; consequently, no mitigation measures are proposed. However, PG&E will employ standard best management practices during operations, such as minimizing vehicle trips and keeping vehicles and equipment well maintained.

In order to further minimize already less-than-significant GHG impacts resulting from project operations, PG&E will implement feasible GHG minimization measures among those identified in Section 6.4 of the California Public Utility Commission (CPUC) PEA Checklist for Transmission Line and Substation Projects. These will include the use of energy efficient lighting within the substation building. In addition, to further avoid and minimize potential SF_6 emissions, PG&E will incorporate the following measures:

- Incorporate Windsor Substation into PG&E's system-wide SF6 emission reduction program. Since 1998, PG&E has implemented a programmatic plan to inventory, track, and recycle SF6 inputs, and inventory and monitor SF6 leakage rates in order to facilitate timely replacement of leaking breakers. PG&E has improved its leak detection procedures and increased awareness of SF6 issues within the company. X-ray technology is now used to inspect internal circuit breaker components to eliminate dismantling of breakers, reducing SF6 handling and accidental releases. As an active member of EPA's SF6 Emission Reduction Partnership for Electrical Power Systems, PG&E has focused on reducing SF6 emissions from its transmission and distribution operations and has reduced the SF6 leak rate by 89 percent and absolute SF6 emissions by 83 percent.

- Require that Windsor Substation's breakers have a manufacturer's guaranteed leakage rate of 0.5 percent per year or less for SF6.

- Maintain substation breakers in accordance with PG&E's maintenance guidelines.

- Comply with California Air Resources Board Early Action Measures as these policies become effective.

In addition, PG&E is implementing the following voluntary company-wide actions to further reduce GHG emissions:

- PG&E supports the Natural Gas STAR, a program promoting the reduction of methane (at least 21 times as potent as CO_2 on a per ton basis) from natural gas pipeline operations. Since 1998, PG&E has avoided the release of thousands of tons of methane.

- In June 2007, PG&E launched the ClimateSmart program, a voluntary GHG emission reduction program that allows its customers to balance out the GHG emissions that are produced by the energy they use, making their energy use "climate neutral." For ClimateSmart customers, PG&E calculates the amount needed to make the GHG emissions associated with the customer's energy use "climate neutral" and adds this tax deductible amount to their monthly energy bill. One hundred percent of customer payments are applied to funding new GHG emission reduction projects in California, such as projects that capture methane gas from dairy farms and landfills and those that conserve and restore California's forests.

- PG&E is offsetting all of the GHG emissions associated with the energy used in PG&E's buildings by participating in its ClimateSmart program. In 2007, this amounted to over 50,000 tons of CO_2 reductions.

CARB staff is continuing to draft rules to implement the Assembly Bill 32 Scoping Plan and hold public workshops on each measure, including market mechanisms. The CARB has identified "Discrete Early Actions" that can be implemented to reduce GHG emissions from the years 2007 to 2012. PG&E will implement these measures and policies as they become effective. These actions will further reduce the company-wide GHG emissions for all PG&E projects, including this one.

5.7 REFERENCES

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