APPENDIX E

AIR QUALITY AND GREENHOUSE GAS ANALYSIS

FOR THE

SIERRA GATEWAY APARTMENTS PROJECT

APRIL 21, 2017

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Chapters **Page Numbers**

Appendices

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1.1 INTRODUCTION

This Air Quality and Greenhouse Gas Analysis identifies and analyzes the potential impacts from the Sierra Gateway Apartments Project (hereinafter "proposed project") related to air quality and greenhouse gas (GHG) emissions. The information and analysis in this document is prepared in accordance with the requirements of the California Environmental Quality Act (CEQA) Guidelines and the Placer County Air Pollution Control District requirements. The modeling efforts utilized the California Emission Estimator Model (CalEEMod)™ (v.2016.3.1). Modeling outputs are provided in the Appendix. This study is organized as follows:

- Chapter 1 Introduction
- Chapter 2 Air Quality Analysis
- Chapter 3 Greenhouse Gas Emissions Analysis
- Chapter 4 References

The Air Quality Analysis and Greenhouse Gas Emissions Analysis each include an environmental setting, regulatory setting, thresholds of significance, impacts, and mitigation.

1.2 PROJECT SUMMARY

The proposed project consists of the construction of 195 apartment units on 10.19 gross acres located near the corner of Rocklin Road and Sierra College Boulevard in the City of Rocklin, Placer County. The proposed project includes a Site Plan for 195 units, consisting of 104 one bedroom units, 82 two bedroom units, and 9 three bedroom units. The proposed project includes a 6,716 square foot clubhouse, which will include a leasing office, gym, and pool. There will be a total of 194,733 square feet of living space. Table 1-1 provides a summary of the project dwellings.

TABLE 1-1: PROJECT SUMMARY (DWELLINGS)

One Bedroom Units		
Building	**Square Feet**	**# Units**
A	665	49
B	715	24
C	775	31
Two Bedroom Units		
Building	**Square Feet**	**# Units**
D	1050	73
D1	1230	8
M	1180	1
Three Bedroom Units		
Building	**Square Feet**	**# Units**
E	1340	9

SOURCE: MVE 2015

All units would include garage, parking, carport parking, and uncovered parking. This includes 195 covered parking stalls, 192 uncovered parking stalls, and 11 handicap parking stalls. The required guest and handicap parking provided is designed to meet the City code requirements.

Primary access to the project site is from two entry points off Rocklin Road, including a median break to allow all directional access to the project site from Rocklin Road. A secondary access is provided from Water Lily Lane. The proposed project will also include pedestrian circulation, drive aisles, and landscaping.

This chapter describes the regional air quality, current attainment status of the air basin, local sensitive receptors, emission sources, and impacts that are likely to result from project implementation. This section is based in part on the following technical studies: *Air Quality and Land Use Handbook: A Community Health Perspective (California Air Resources Board 2007), CEQA Air Quality Handbook Assessing and Mitigating Air Quality Impacts for Projects Under CEQA* (PCAPCD 2012), Review of Land Use Projects Under CEQA (PCAPCD 2016), CalEEMod *(v.2016.3.1)* (California Air Pollution Control Officers Association 2013). (Note: The Greenhouse Gases and Climate Change analysis is located in a separate chapter.)

2.1 EXISTING SETTING

SACRAMENTO VALLEY AIR BASIN

The City of Rocklin is located within the Sacramento Valley Air Basin (SVAB). The SVAB is the northern half of California's Great Valley and is bordered on three sides (west, north, and east) by mountain ranges, with peaks in the eastern range above 9,000 feet. The SVAB is approximately 13,700 square miles and essentially a smooth valley floor with elevations ranging from 40 to 500 feet. The rolling valley is interrupted by the Sutter Buttes, an area of 80 square miles in northern Sutter County, which rise abruptly to more than 2,100 feet above the valley floor.

Climate

The climate in the project area is considered Mediterranean, which is characterized by hot, dry summers and cool, wet winters. Within the project area, temperatures range from an average January low of approximately 36°F to an average July high of approximately 96°F. Between mid-April and mid-October, significant precipitation is unlikely and high temperatures often peak at over 100 degrees Fahrenheit (F) with lows in the high 50s and low 60s.

Winters are fairly mild, with the most rainfall coming in January. Rainfall in the project area averages approximately 26 inches annually and occurs predominantly from October to May. During the winter, highs are typically in the 60s with lows in the 30s. "Tule fog" (thick ground fog) is often present during the autumn and winter months. The typical seasonal pattern is for North Pacific cyclonic storms to periodically sweep into the area from October through April and for high pressure to dominate over the area and to deflect storms from May to October.

Air Movement

As with all of Central California, climate in the project area is dominated by the strength and location of a semi-permanent, subtropical high-pressure cell over the northeastern Pacific Ocean. Climate is also affected by the temperature moderating effects of the nearby oceanic heat reservoir. Warm summers, cool winters, rainfall, daytime onshore breezes, and moderate humidity characterize regional climatic conditions.

In summer, when the high-pressure cell is strongest, temperatures are very warm and humidity is low. The daily incursion of the sea breeze into the Central Valley, however, creates persistent breezes that moderate the summer heat. In winter, when the high-pressure cell is weakest,

conditions are characterized by occasional rainstorms interspersed with stagnant conditions and sometimes heavy fog.

Airflow patterns in the basin can be characterized by one of eight directional types, the most frequent being northwesterly, that is to say, predominant surface wind flows in the project area are from the south/southeast. These wind flows generally occur at speeds of approximately 9-10 mph (WRCC 2007, CARB 1992). The northwesterly flow is predominant in spring and summer, but seasonal variations do occur. Calm conditions dominate the winter months.

Inversions occur in the SVAB with great frequency in all seasons. The most stable inversions occur in late summer and fall. The summertime inversions are often the result of marine air pushing under an overlying warm air mass. These are termed "marine inversions" and are generally accompanied by brisk afternoon winds, which provide good air circulation.

In contrast, many autumn inversions are the result of warm air subsiding in a high-pressure cell where accompanying light winds do not provide adequate dispersion. Autumn inversions limit vertical mixing, creating a very stable layer of air with very light or calm winds. These inversions are usually present on clear cold nights during late fall and winter. In the morning, these ground based inversions are weakened and eventually eliminated by solar heating. As a result, they are strongest in the late night and early morning, when ground-level temperatures are coldest and solar radiation is low.

Seasonal Pollution Variations

Carbon monoxide, oxides of nitrogen, particulate matters, and lead particulate concentrations in the late fall and winter are highest when there is little interchange of air between the valley and the coast and when humidity is high following winter rains. This type of weather is associated with radiation fog, known as tule fog, when temperature inversions at ground level persist over the entire valley for several weeks and air movement is virtually absent.

Pollution potential in the project area is relatively high due to the combination of air pollutant emissions sources, transport of pollutants into the area and meteorological conditions that are conducive to high levels of air pollution. Elevated levels of particulate matter (primarily fine particulates or $PM_{2.5}$) and ground-level ozone are of most concern to regional air quality officials.

Local carbon monoxide "hot spots" are important to a lesser extent. Ground-level ozone, the principal component of smog, is not directly emitted into the atmosphere but is formed by the reaction of reactive organic gases (ROG) and nitrogen oxides (NOx) (known as ozone precursor pollutants) in the presence of strong sunlight. Ozone levels are highest in the project area during late spring through early fall, when weather conditions are conducive and emissions of the precursor pollutants are highest.

Surface-based inversions that form during late fall and winter nights cause localized air pollution problems (PM_{10} and carbon monoxide) near the emission sources because of poor dispersion conditions. Emission sources are primarily from automobiles. Conditions are exacerbated during drought-year winters.

CRITERIA POLLUTANTS

The United States Environmental Protection Agency (EPA) uses six "criteria pollutants" as indicators of air quality, and has established for each of them a maximum concentration above which adverse effects on human health may occur. These threshold concentrations are called National Ambient Air Quality Standards (NAAQS). Each criteria pollutant is described below.

Ozone (O_3) is a photochemical oxidant and the major component of smog. While O_3 in the upper atmosphere is beneficial to life by shielding the earth from harmful ultraviolet radiation from the sun, high concentrations of O_3 at ground level are a major health and environmental concern. O_3 is not emitted directly into the air but is formed through complex chemical reactions between precursor emissions of volatile organic compounds (VOC) and oxides of nitrogen (NOx) in the presence of sunlight. These reactions are stimulated by sunlight and temperature so that peak O_3 levels occur typically during the warmer times of the year. Both VOCs and NOx are emitted by transportation and industrial sources. VOCs are emitted from sources as diverse as autos, chemical manufacturing, dry cleaners, paint shops and other sources using solvents.

The reactivity of O_3 causes health problems because it damages lung tissue, reduces lung function and sensitizes the lungs to other irritants. Scientific evidence indicates that ambient levels of O_3 not only affect people with impaired respiratory systems, such as asthmatics, but healthy adults and children as well. Exposure to O_3 for several hours at relatively low concentrations has been found to significantly reduce lung function and induce respiratory inflammation in normal, healthy people during exercise. This decrease in lung function generally is accompanied by symptoms including chest pain, coughing, sneezing and pulmonary congestion.

Carbon monoxide (CO) is a colorless, odorless and poisonous gas produced by incomplete burning of carbon in fuels. When CO enters the bloodstream, it reduces the delivery of oxygen to the body's organs and tissues. Health threats are most serious for those who suffer from cardiovascular disease, particularly those with angina or peripheral vascular disease. Exposure to elevated CO levels can cause impairment of visual perception, manual dexterity, learning ability and performance of complex tasks.

Nitrogen dioxide (NO_2) is a brownish, highly reactive gas that is present in all urban atmospheres. NO_2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Nitrogen oxides are an important precursor both to ozone (O_3) and acid rain, and may affect both terrestrial and aquatic ecosystems. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide (NOx). NOx plays a major role, together with VOCs, in the atmospheric reactions that produce O_3. NOx forms when fuel is burned at high temperatures. The two major emission sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.

Sulfur dioxide (SO_2) affects breathing and may aggravate existing respiratory and cardiovascular disease in high doses. Sensitive populations include asthmatics, individuals with bronchitis or emphysema, children and the elderly. SO_2 is also a primary contributor to acid deposition, or acid rain, which causes acidification of lakes and streams and can damage trees, crops, historic buildings

and statues. In addition, sulfur compounds in the air contribute to visibility impairment in large parts of the country. Ambient SO_2 results largely from stationary sources such as coal and oil combustion, steel mills, refineries, pulp and paper mills and from nonferrous smelters.

Particulate matter (PM) includes dust, dirt, soot, smoke and liquid droplets directly emitted into the air by sources such as factories, power plants, cars, construction activity, fires and natural windblown dust. Particles formed in the atmosphere by condensation or the transformation of emitted gases such as SO_2 and VOCs are also considered particulate matter.

Based on studies of human populations exposed to high concentrations of particles (sometimes in the presence of SO_2) and laboratory studies of animals and humans, there are major effects of concern for human health. These include effects on breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alterations in the body's defense systems against foreign materials, damage to lung tissue, carcinogenesis and premature death.

Respirable particulate matter (PM_{10}) consists of small particles, less than 10 microns in diameter, of dust, smoke, or droplets of liquid which penetrate the human respiratory system and cause irritation by themselves, or in combination with other gases. Particulate matter is caused primarily by dust from grading and excavation activities, from agricultural activities (as created by soil preparation activities, fertilizer and pesticide spraying, weed burning and animal husbandry), and from motor vehicles, particularly diesel-powered vehicles. PM_{10} causes a greater health risk than larger particles, since these fine particles can more easily penetrate the defenses of the human respiratory system.

Fine particulate matter ($PM_{2.5}$) consists of fine particles, which are less than 2.5 microns in size. Similar to PM_{10}, these particles are primarily the result of combustion in motor vehicles, particularly diesel engines, as well as from industrial sources and residential/agricultural activities such as burning. It is also formed through the reaction of other pollutants. As with PM_{10}, these particulates can increase the chance of respiratory disease, and cause lung damage and cancer. In 1997, the EPA created new Federal air quality standards for $PM_{2.5}$.

The major subgroups of the population that appear to be most sensitive to the effects of particulate matter include individuals with chronic obstructive pulmonary or cardiovascular disease or influenza, asthmatics, the elderly and children. Particulate matter also impacts soils and damages materials, and is a major cause of visibility impairment.

Lead (Pb) exposure can occur through multiple pathways, including inhalation of air and ingestion of Pb in food, water, soil or dust. Excessive Pb exposure can cause seizures, mental retardation and/or behavioral disorders. Low doses of Pb can lead to central nervous system damage. Recent studies have also shown that Pb may be a factor in high blood pressure and subsequent heart disease.

ODORS

Typically odors are regarded as a nuisance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another.

It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air.

When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

SENSITIVE RECEPTORS

A sensitive receptor is a location where human populations, especially children, seniors, and sick persons, are present and where there is a reasonable expectation of continuous human exposure to pollutants. Examples of sensitive receptors include residences, hospitals and schools. The proposed project includes residences that presumable will have sensitive receptors.

AMBIENT AIR QUALITY

Both the U.S. Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. These ambient air quality standards represent safe levels of contaminants that avoid specific adverse health effects associated with each pollutant.

The federal and California state ambient air quality standards are summarized in **Table 2-1** for important pollutants. The federal and state ambient standards were developed independently, although both processes attempted to avoid health-related effects. As a result, the federal and state

standards differ in some cases. In general, the California state standards are more stringent. This is particularly true for ozone and particulate matter between 2.5 and 10 microns in diameter (PM_{10}).

The U.S. Environmental Protection Agency established new national air quality standards for ground-level ozone and for fine particulate matter in 1997. The 1-hour ozone standard was phased out and replaced by an 8-hour standard of 0.075 PPM. Implementation of the 8-hour standard was delayed by litigation, but was determined to be valid and enforceable by the U.S. Supreme Court in a decision issued in February of 2001. In April 2005, the Air Resources Board approved a new eight-hour standard of 0.070 ppm and retained the one-hour ozone standard of 0.09 after an extensive review of the scientific literature. The U.S. EPA signed a final rule for the Federal ozone eight-hour standard of 0.070 ppm on October 1, 2015, and was effective as of December 28, 2015.

TABLE 2-1: FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

POLLUTANT	*AVERAGING TIME*	*FEDERAL PRIMARY STANDARD*	*STATE STANDARD*
Ozone	1-Hour 8-Hour	-- 0.075 ppm	0.09 ppm 0.070 ppm
Carbon Monoxide	8-Hour 1-Hour	9.0 ppm 35.0 ppm	9.0 ppm 20.0 ppm
Nitrogen Dioxide	Annual 1-Hour	0.53 ppm 0.100 ppm	0.03 ppm 0.18 ppm
Sulfur Dioxide	Annual 3-Hour 1-Hour	-- 0.5 ppm 75 ppb	-- 0.04 ppm 0.25 ppm
PM_{10}	Annual 24-Hour	-- 150 ug/m3	20 ug/m3 50 ug/m3
$PM_{2.5}$	Annual 24-Hour	15 ug/m3 35 ug/m3	12 ug/m3 --
Lead	30-Day Avg. 3-Month Avg.	-- 0.15 ug/m3	1.5 ug/m3 --

NOTES: PPM = PARTS PER MILLION, PPB = PARTS PER BILLION, UG/M3 = MICROGRAMS PER CUBIC METER

SOURCES: CALIFORNIA AIR RESOURCES BOARD, 2015; U.S. EPA, 2015.

In 1997, new national standards for fine particulate matter diameter 2.5 microns or less ($PM_{2.5}$) were adopted for 24-hour and annual averaging periods. The current PM_{10} standards were to be retained, but the method and form for determining compliance with the standards were revised.

The State of California regularly reviews scientific literature regarding the health effects and exposure to PM and other pollutants. On May 3, 2002, CARB staff recommended lowering the level of the annual standard for PM_{10} and establishing a new annual standard for $PM_{2.5}$. The new standards became effective on July 5, 2003, with another revision on November 29, 2005.

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern. TACs are injurious in small quantities and are regulated despite the absence of criteria documents. The identification, regulation and monitoring of TACs is relatively recent compared to that for criteria pollutants. Unlike criteria pollutants, TACs are regulated on the basis of risk rather than specification of safe levels of contamination.

Existing air quality concerns within the project area is related to increases of regional criteria air pollutants (e.g., ozone and particulate matter), exposure to toxic air contaminants, odors, and increases in greenhouse gas emissions contributing to climate change. The primary source of ozone

(smog) pollution is motor vehicles which account for 70 percent of the ozone in the region. Particulate matter is caused by dust, primarily dust generated from construction and grading activities, and smoke which is emitted from fireplaces, wood-burning stoves, and agricultural burning.

Attainment Status

In accordance with the California Clean Air Act (CCAA), the CARB is required to designate areas of the state as attainment, nonattainment, or unclassified with respect to applicable standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A "nonattainment" designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria.

Depending on the frequency and severity of pollutants exceeding applicable standards, the nonattainment designation can be further classified as serious nonattainment, severe nonattainment, or extreme nonattainment, with extreme nonattainment being the most severe of the classifications. An "unclassified" designation signifies that the data do not support either an attainment or nonattainment status. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The U.S. EPA designates areas for ozone (O_3), carbon monoxide (CO), and nitrogen dioxide (NO_2) as "does not meet the primary standards," "cannot be classified," or "better than national standards." For sulfur dioxide (SO_2), areas are designated as "does not meet the primary standards," "does not meet the secondary standards," "cannot be classified," or "better than national standards." However, the CARB terminology of attainment, nonattainment, and unclassified is more frequently used.

The western portion of Placer County has a state designation of Nonattainment for Ozone and PM_{10}, and is either Unclassified or Attainment for all other criteria pollutants. The western portion of Placer County has a national designation of Nonattainment for ozone and $PM_{2.5}$. The County is designated either attainment or unclassified for all other criteria pollutants. **Table 2-2** presents the state and nation attainment status for western Placer County.

TABLE 2-2: STATE AND NATIONAL ATTAINMENT STATUS

CRITERIA POLLUTANTS	*STATE DESIGNATIONS*	*NATIONAL DESIGNATIONS*
Ozone	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Unclassified
$PM_{2.5}$	Attainment	Nonattainment
Carbon Monoxide	Attainment	Unclassified/Attainment
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified
Sulfates	Attainment	
Lead	Attainment	Unclassified/Attainment
Hydrogen Sulfide	Unclassified	
Visibility Reducing Particles	Unclassified	

SOURCES: CALIFORNIA AIR RESOURCES BOARD (2016).

Sacramento Valley Air Basin Monitoring

The SVAB consists of 13 counties covering approximately 13,700 square miles. The SVAB stretches about 200 miles long in a north-south direction, and has a maximum width of about 150 miles, although the width of the valley floor only averages about 50 miles. Topography in the SVAB varies drastically with valley floor, rolling foothills, and mountains. Elevations range from 40 feet to over 9,000 feet.

CARB maintains numerous air quality monitoring sites throughout each County in the Air Basin to measure ozone, $PM_{2.5}$, and PM_{10}. It is important to note that the federal ozone 1-hour standard was revoked by the EPA and is no longer applicable for federal standards. Data obtained from the monitoring sites throughout the SVAB between 2013 and 2015 is summarized in **Tables 2-3 through 2-5**.

TABLE 2-3 SVAB AMBIENT AIR QUALITY MONITORING DATA SUMMARY - OZONE 2013-2015

Year	Days > Standard				1-Hour Observations			8-Hour Averages				Year Coverage	
	State		National			State	Nat'l	State		National			
	1-Hr	8-Hr	1-Hr	'08 8-Hr	Max.	D.V.[1]	D.V.[2]	Max.	D.V.[1]	Max.	'08 D.V.[2]	Min	Max
2015	4	19	0	16	0.122	0.10	0.101	0.100	0.088	0.100	0.080	0	100
2014	7	35	0	34	0.116	0.11	0.116	0.088	0.099	0.088	0.085	87	100
2013	5	17	0	16	0.117	0.12	0.121	0.094	0.106	0.093	0.090	70	100

NOTES: ALL CONCENTRATIONS EXPRESSED IN PARTS PER MILLION. THE NATIONAL 1-HOUR OZONE STANDARD WAS REVOKED IN JUNE 2005 AND IS NO LONGER IN EFFECT. STATISTICS RELATED TO THE REVOKED STANDARD ARE SHOWN IN ITALICS. D.V. [1]= STATE DESIGNATION VALUE. D.V. [2]= NATIONAL DESIGN VALUE.

SOURCES: CALIFORNIA AIR RESOURCES BOARD AEROMETRIC DATA ANALYSIS AND MANAGEMENT SYSTEM (ADAM) AIR POLLUTION SUMMARIES, 2017.

TABLE 2-4 SVAB AMBIENT AIR QUALITY MONITORING DATA SUMMARY - PM 2.5 2013-2015

Year	Est. Days > Nat'l '06 Std.	Annual Average		Nat'l Ann. Std. D.V.[1]	State Annual D.V.[2]	Nat'l '06 Std. 98th Percentile	Nat'l '06 24-Hr Std. D.V.[1]	High 24-Hour Average		Year Coverage	
		Nat'l	State					Nat'l	State	Min.	Max
2015	8.7	10.4	12.3	10.2	13	37.8	35	109.8	109.8	86	99
2014	4.0	8.8	10.5	9.8	13	28.1	32	190.2	190.2	82	100
2013	13.0	11.5	13.4	10.4	14	39.7	36	75.6	75.6	72	99

NOTES: ALL CONCENTRATIONS EXPRESSED IN PARTS PER MILLION. STATE AND NATIONAL STATISTICS MAY DIFFER FOR THE FOLLOWING REASONS: STATE STATISTICS ARE BASED ON CALIFORNIA APPROVED SAMPLERS, WHEREAS NATIONAL STATISTICS ARE BASED ON SAMPLERS USING FEDERAL REFERENCE OR EQUIVALENT METHODS. STATE AND NATIONAL STATISTICS MAY THEREFORE BE BASED ON DIFFERENT SAMPLERS. STATE CRITERIA FOR ENSURING THAT DATA ARE SUFFICIENTLY COMPLETE FOR CALCULATING VALID ANNUAL AVERAGES ARE MORE STRINGENT THAN THE NATIONAL CRITERIA. D.V. [1]= STATE DESIGNATION VALUE. D.V. [2]= NATIONAL DESIGN VALUE

SOURCES: CALIFORNIA AIR RESOURCES BOARD AEROMETRIC DATA ANALYSIS AND MANAGEMENT SYSTEM (ADAM) AIR POLLUTION SUMMARIES, 2017.

TABLE 2-5: SVAB AMBIENT AIR QUALITY MONITORING DATA SUMMARY - PM $_{10}$ 2013-2015

Year	*Est. Days > Std.*		*Annual Average*		*3-Year Average*		*High 24-Hr Average*		*Year Coverage*
	Nat'l	*State*	*Nat'l*	*State*	*Nat'l*	*State*	*Nat'l*	*State*	
2015	0.0	25.2	27.0	24.9	20	25	114.6	118.0	100
2014	0.0	13.2	28.0	22.2	22	25	105.7	106.4	100
2013	*	23.3	26.8	24.8	24	25	96.4	92.3	100

NOTES: THE NATIONAL ANNUAL AVERAGE PM$_{10}$ STANDARD WAS REVOKED IN DECEMBER 2006 AND IS NO LONGER IN EFFECT. AN EXCEEDANCE IS NOT NECESSARILY A VIOLATION. STATISTICS MAY INCLUDE DATA THAT ARE RELATED TO AN EXCEPTIONAL EVENT. STATE AND NATIONAL STATISTICS MAY DIFFER FOR THE FOLLOWING REASONS: STATE STATISTICS ARE BASED ON CALIFORNIA APPROVED SAMPLERS, WHEREAS NATIONAL STATISTICS ARE BASED ON SAMPLERS USING FEDERAL REFERENCE OR EQUIVALENT METHODS. STATE AND NATIONAL STATISTICS MAY THEREFORE BE BASED ON DIFFERENT SAMPLERS. NATIONAL STATISTICS ARE BASED ON STANDARD CONDITIONS. STATE CRITERIA FOR ENSURING THAT DATA ARE SUFFICIENTLY COMPLETE FOR CALCULATING VALID ANNUAL AVERAGES ARE MORE STRINGENT THAN THE NATIONAL CRITERIA.

SOURCES: CALIFORNIA AIR RESOURCES BOARD AEROMETRIC DATA ANALYSIS AND MANAGEMENT SYSTEM (ADAM) AIR POLLUTION SUMMARIES, 2017.

2.2 REGULATORY SETTING

FEDERAL

Clean Air Act

The Federal Clean Air Act (FCAA) was first signed into law in 1970. In 1977, and again in 1990, the law was substantially amended. The FCAA is the foundation for a national air pollution control effort, and it is composed of the following basic elements: NAAQS for criteria air pollutants, hazardous air pollutant standards, state attainment plans, motor vehicle emissions standards, stationary source emissions standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions.

The EPA is responsible for administering the FCAA. The FCAA requires the EPA to set NAAQS for several problem air pollutants based on human health and welfare criteria. Two types of NAAQS were established: primary standards, which protect public health, and secondary standards, which protect the public welfare from non-health-related adverse effects such as visibility reduction.

The law recognizes the importance for each state to locally carry out the requirements of the FCAA, as special consideration of local industries, geography, housing patterns, etc. are needed to have full comprehension of the local pollution control problems. As a result, the EPA requires each state to develop a State Implementation Plan (SIP) that explains how each state will implement the FCAA within their jurisdiction. A SIP is a collection of rules and regulations that a particular state will implement to control air quality within their jurisdiction. CARB is the state agency that is responsible for preparing and implementing the California SIP.

Transportation Conformity

Transportation conformity requirements were added to the FCAA in the 1990 amendments, and the EPA adopted implementing regulations in 1997. See §176 of the FCAA (42 U.S.C. §7506) and 40 CFR Part 93, Subpart A. Transportation conformity serves much the same purpose as general conformity: it ensures that transportation plans, transportation improvement programs, and projects that are

developed, funded, or approved by the United States Department of Transportation or that are recipients of funds under the Federal Transit Act or from the Federal Highway Administration (FHWA), conform to the SIP as approved or promulgated by EPA.

Currently, transportation conformity applies in nonattainment areas and maintenance areas. Under transportation conformity, a determination of conformity with the applicable SIP must be made by the agency responsible for the project, such as the Metropolitan Planning Organization, the Council of Governments, or a federal agency. The agency making the determination is also responsible for all the requirements relating to public participation. Generally, a project will be considered in conformance if it is in the transportation improvement plan and the transportation improvement plan is incorporated in the SIP. If an action is covered under transportation conformity, it does not need to be separately evaluated under general conformity.

Transportation Control Measures

One particular aspect of the SIP development process is the consideration of potential control measures as a part of making progress towards clean air goals. While most SIP control measures are aimed at reducing emissions from stationary sources, some are typically also created to address mobile or transportation sources. These are known as transportation control measures (TCMs). TCM strategies are designed to reduce vehicle miles traveled and trips, or vehicle idling and associated air pollution. These goals are achieved by developing attractive and convenient alternatives to single-occupant vehicle use. Examples of TCMs include ridesharing programs, transportation infrastructure improvements such as adding bicycle and carpool lanes, and expansion of public transit.

STATE

CARB Mobile-Source Regulation

The State of California is responsible for controlling emissions from the operation of motor vehicles in the state. Rather than mandating the use of specific technology or the reliance on a specific fuel, the CARB's motor vehicle standards specify the allowable grams of pollution per mile driven. In other words, the regulations focus on the reductions needed rather than on the manner in which they are achieved. Towards this end, the CARB has adopted regulations which required auto manufacturers to phase in less polluting vehicles.

California Clean Air Act

The California Clean Air Act (CCAA) was first signed into law in 1988. The CCAA provides a comprehensive framework for air quality planning and regulation, and spells out, in statute, the state's air quality goals, planning and regulatory strategies, and performance. CARB is the agency responsible for administering the CCAA. CARB established ambient air quality standards pursuant to the California Health and Safety Code (CH&SC) [§39606(b)], which are similar to the federal standards.

Air Quality Standards

NAAQS are determined by the EPA. The standards include both primary and secondary ambient air quality standards. Primary standards are established with a safety margin. Secondary standards are more stringent than primary standards and are intended to protect public health and welfare. States have the ability to set standards that are more stringent than the federal standards. As such, California established more stringent ambient air quality standards.

Federal and state ambient air quality standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, suspended particulates (PM_{10}) and lead. In addition, California has created standards for pollutants that are not covered by federal standards. The state and federal primary standards for major pollutants are shown in Table 2-1.

Tanner Air Toxics Act

California regulates TACs primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and has adopted EPA's list of HAPs as TACs. Most recently, diesel PM was added to the CARB list of TACs. Once a TAC is identified, CARB then adopts an Airborne Toxics Control Measure (ATCM) for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate Best Available Control Technology (BACT) to minimize emissions.

The AB 2588 requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures. CARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators). In February 2000, CARB adopted a new public-transit bus-fleet rule and emission standards for new urban buses. These rules and standards provide for (1) more stringent emission standards for some new urban bus engines, beginning with 2002 model year engines; (2) zero-emission bus demonstration and purchase requirements applicable to transit agencies; and (3) reporting requirements under which transit agencies must demonstrate compliance with the urban transit bus fleet rule. Upcoming milestones include the low-sulfur diesel-fuel requirement, and tighter emission standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide.

LOCAL

Placer County Air Pollution Control District

At the county level, air quality is managed through land use and development planning practices that are implemented by Placer County and through permitted source controls that are

implemented by the Placer County Air Pollution Control District. The PCAPCD is also the agency responsible for enforcing many federal and state air quality requirements and for establishing air quality rules and regulations. The PCAPCD attains and maintains air quality conditions in Placer County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of the PCAPCD includes the preparation of plans for the attainment of ambient air quality standards, adoption, and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. The PCAPCD also inspects stationary sources of air pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the federal Clean Air Act, the Clean Air Act Amendments of 1990, and the California Clean Air Act.

AIR QUALITY PLANS

The 1988 California Clean Air Act requires nonattainment areas to develop plans aimed at achieving state ambient standards. The PCAPCD, in coordination with the air quality management districts and air pollution control districts of El Dorado, Sacramento, Solano, Sutter, and Yolo counties, prepared and submitted the 1991 Air Quality Attainment Plan (AQAP) in compliance with the requirements set forth in the CCAA, which specifically addressed the nonattainment status for ozone and to a lesser extent PM10. The CCAA also requires a triennial assessment of the extent of air quality improvements and emission reductions achieved through the use of control measures. As part of the assessment, the attainment plan must be reviewed and, if necessary, revised to correct for deficiencies in progress and to incorporate new data or projections. The requirement of the CCAA for a first triennial progress report, and revision of the 1991 AQAP was fulfilled with the preparation and adoption of the 1994 Ozone Attainment Plan.

Additional triennial reports were also prepared in 1997, 2000, and 2003 in compliance with the CCAA that act as incremental updates. Air quality management districts are required to prepare an Annual Progress Report and submit the report to CARB by December 31 of each year. At a minimum, the Annual Progress Report shall contain the proposed and actual dates for the adoption and implementation of each measure listed in the previous Triennial Plan. The most recent report, the 2007 Annual Progress Report, was developed in October 2008.

The AQAP has since become part of the SIP described above within the federal regulatory framework discussion, in accordance with the requirements of the CAAA. As discussed above, federal clean air laws require areas with unhealthy levels of ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and inhalable particulate matter to develop plans, known as SIPs, describing how they will attain national ambient air quality standards (NAAQS). SIPs are not single documents but rather a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), district rules, state regulations, and federal controls.

The most updated SIP affecting the City of Rocklin area, which includes the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan as well as the 1991 Air Quality Attainment Plan and subsequent progress reports, contains the information and analyses to fulfill the federal Clean Air Act requirements for demonstrating reasonable further progress and

attainment of the 1997 8-hour ozone NAAQS for the Sacramento region. In addition, this plan establishes an updated emissions inventory, provides photochemical modeling results, proposes the implementation of reasonably available control measures, and sets new motor vehicle emission budgets for transportation conformity purposes.

The air districts in the SVAB held public hearings in early 2009 to consider adoption of the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan dated December 19, 2008. The PCAPCD held a public hearing and adopted the plan on February 19, 2009. The plan shows that the region is meeting minimum emission reduction progress and would reach the air quality standard no later than 2018. In addition, the plan makes commitments to adopt and implement new reasonably available control measures.

All projects are subject to rules and regulations adopted by the PCAPCD in effect at the time of construction. Specific rules applicable to future construction resulting from the implementation of the proposed General Plan Update may include, but are not limited to:

- **Rule 202** – Visible Emissions. A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is as dark or darker in shade as that designated as number 1 on the Ringelmann Chart, as published by the United States Bureau of Mines.
- **Rule 205** – Nuisances. A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause to have a natural tendency to cause injury or damage to business or property.
- **Rule 207** – Particulate Matter. For the Sacramento Valley Air Basin and the Mountain Counties Air Basin portions of the Placer County Air Pollution Control District, a person shall not release or discharge into the atmosphere from any source or single processing unit, exclusive of sources emitting combustion contaminants only, particulate matter emissions in excess of: 0.1 grains per cubic foot of gas at District standard conditions.
- **Rule 217** – Cutback and Emulsified Asphalt Paving Materials. A person shall not manufacture for sale nor use for paving, road construction, or road maintenance any rapid cure cutback asphalt; slow cure cutback asphalt containing organic compounds which evaporate at 500°F or lower as determined by current American Society for Testing and Materials (ASTM) Method D402; medium cure cutback asphalt except as provided in Section 1.2.; or emulsified asphalt containing organic compounds which evaporate at 500°F or lower as determined by current ASTM Method D244, in excess of 3 percent by volume.
- **Rule 218** – Application of Architectural Coatings. No person shall manufacture, blend, or repackage for sale within the PCAPCD; supply, sell, or offer for sale within the PCAPCD; or solicit for application or apply within the PCAPCD, any architectural coating with a volatile organic carbon (VOC) content in excess of the corresponding specified manufacturer's maximum recommendation.

- **Rule 225** – Woodburning Appliances. The general purpose of this rule is to limit emissions of particulate matter entering the atmosphere from the operation of a wood burning appliance. This rule applies to any person who manufactures, sells, advertises, offers for sale, supplies, or operates a permanently installed, indoor or outdoor, wood burning appliance in Placer County, and any person who installs a wood-burning appliance in any single or multiple residential development or commercial development in Placer County.
- **Rule 228** – Fugitive Dust
    - Visible Emissions Not Allowed Beyond the Boundary Line: A person shall not cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area (including disturbance as a result of the raising and/or keeping of animals or by vehicle use), such that the presence of such dust remains visible in the atmosphere beyond the boundary line of the emission source.
    - Visible Emissions from Active Operations: In addition to the requirements of Rule 202, Visible Emissions, a person shall not cause or allow fugitive dust generated by active operations, an open storage pile, or a disturbed surface area, such that the fugitive dust is of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke as dark or darker in shade as that designated as number 2 on the Ringelmann Chart, as published by the United States Bureau of Mines.
    - Concentration Limit: A person shall not cause or allow PM10 levels to exceed 50 micrograms per cubic meter (µg/m3) (24-hour average) when determined, by simultaneous sampling, as the difference between upwind and downwind samples collected on high-volume particulate matter samplers or other EPA-approved equivalent method for PM10 monitoring.
    - Track-Out onto Paved Public Roadways: Visible roadway dust as a result of active operations, spillage from transport trucks, and the track-out of bulk material onto public paved roadways shall be minimized and removed.
        - The track-out of bulk material onto public paved roadways as a result of operations, or erosion, shall be minimized by the use of track-out and erosion control, minimization, and preventative measures, and removed within one hour from adjacent streets such material anytime track-out extends for a cumulative distance of greater than 50 feet onto any paved public road during active operations.
        - All visible roadway dust tracked out upon public paved roadways as a result of active operations shall be removed at the conclusion of each work day when active operations cease, or every 24 hours for continuous operations. Wet sweeping or a High Efficiency Particulate Air (HEPA) filter-equipped vacuum device shall be used for roadway dust removal.

- Any material tracked out, or carried by erosion, and cleanup water shall be prevented from entering waterways or stormwater inlets as required to comply water quality control requirements.

- Minimum Dust Control Requirements: The following dust mitigation measures are to be initiated at the start and maintained throughout the duration of any construction or grading activity, including any construction or grading for road construction or maintenance.
  - Unpaved areas subject to vehicle traffic must be stabilized by being kept wet, treated with a chemical dust suppressant, or covered.
  - The speed of any vehicles and equipment traveling across unpaved areas must be no more than 15 miles per hour unless the road surface and surrounding area is sufficiently stabilized to prevent vehicles and equipment traveling more than 15 miles per hour from emitting dust exceeding Ringelmann 2 or visible emissions from crossing the project boundary line.
  - Storage piles and disturbed areas not subject to vehicular traffic must be stabilized by being kept wet, treated with a chemical dust suppressant, or covered when material is not being added to or removed from the pile.
  - Prior to any ground disturbance, including grading, excavating, and land clearing, sufficient water must be applied to the area to be disturbed to prevent emitting dust exceeding Ringelmann 2 and to minimize visible emissions from crossing the boundary line.
  - Construction vehicles leaving the site shall be cleaned to prevent dust, silt, mud, and dirt, from being released or tracked offsite.
  - When wind speeds are high enough to result in dust emissions crossing the boundary line, despite the application of dust mitigation measures, grading and earthmoving operations shall be suspended.
  - No trucks are allowed to transport excavated material off-site unless the trucks are maintained such that no spillage can occur from holes or other openings in cargo compartments, and loads are either covered with tarps; or wetted and loaded such that the material does not touch the front, back, or sides of the cargo compartment at any point less than six inches from the top and that no point of the load extends above the top of the cargo compartment.
- Wind-Driven Fugitive Dust Control: A person shall take action(s), such as surface stabilization, establishment of a vegetative cover, or paving, to minimize wind-driven dust from inactive disturbed surface areas.

- **Rule 246** – Natural-Gas-Fired Water Heaters. The general purpose of this rule is to limit the emission of nitrogen oxides (NOx) from natural-gas-fired water heaters. The provisions of

this rule apply to all of Placer County, and this rule applies to any person who manufactures, distributes, offers for sale, sells, or installs any natural gas-fired water heater with a rated heat input capacity less than 75,000 British Thermal Units per hour (BTU/hr), for use in the District.

City of Rocklin General Plan

The City of Rocklin General Plan establishes the following goals and policies relative to air quality and greenhouse gas emissions in the General Plan:

LAND USE ELEMENT GOALS AND POLICIES

GOAL FOR GREENHOUSE GAS EMISSION REDUCTION: Promote land use strategies that decrease reliance on automobile use, increase the use of alternative modes of transportation, maximize efficiency of services provision and reduce emissions of greenhouse gases.

LU-68 Adopt and implement land use strategies that utilize existing infrastructure, reduce the need for new roads, utilities and other public works in newly developing areas, and enhance nonautomobile transportation.

LU-69 Encourage high-density, mixed-use, infill development and creative use of brownfield and under-utilized properties.

LU-70 Increase densities in core areas to support public transit.

LU-71 Add bicycle facilities to City streets and public spaces.

LU-72 Promote infill, mixed-use, higher density development and the creation of affordable housing in mixed use zones.

LU-73 Identify sites suitable for mixed-use development within existing service areas and establish appropriate site-specific standards to accommodate the mixed uses.

LU-74 Promote greater linkage between land uses and transit, as well as other modes of transportation.

LU-75 Promote development and preservation of neighborhood characteristics that encourage walking and bicycle riding in lieu of automobile-based travel.

OPEN SPACE, CONSERVATION AND RECREATION ELEMENT GOALS AND POLICIES

GOAL FOR THE CONSERVATION, DEVELOPMENT AND UTILIZATION OF NATURAL RESOURCES: Conserve and protect natural resources while permitting their managed use, consistent with City, State and Federal requirements.

OCR-58 Require development projects to incorporate stationary and mobile source control measures recommended by the Placer County Air Pollution Control District and

approved by the City for protection of air quality during construction and subsequent operations.

OCR-59 Continue to consult with the Placer County Air Pollution Control District in the development of stationary and mobile source control measures affecting the City of Rocklin.

2.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on the environment associated with air quality if it will:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Cause a violation of 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 in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people.

IMPACTS AND MITIGATION MEASURES

Impact 2-1: Project operations have the potential to cause a violation of any air quality standard or contribute substantially to an existing or projected air quality violation (less than significant with mitigation)

The proposed project would be a direct and indirect source of air pollution, in that it would generate and attract vehicle trips in the region (mobile source emissions) and it would increase area source emissions and energy consumption. The mobile source emissions would be entirely from vehicles, while the area source emissions would be primarily from the use of natural gas fuel combustion, hearth fuel combustion, landscape fuel combustion, consumer products, and architectural coatings. Table 2-6 provides the project-level operational threshold of significance for ROG, NOX, and PM_{10}. There is no threshold established for $PM_{2.5}$.

TABLE 2-6: PROJECT-LEVEL OPERATIONAL EMISSION THRESHOLDS

	ROG	NOx	PM10	PM2.5
Threshold	55 lbs/day	55 lbs/day	82 lbs/day	N/A

SOURCES: PCAPCD CEQA THRESHOLDS OF SIGNIFICANCE JUSTIFICATION REPORT (PCAPCD 2016)

The California Emission Estimator Model (CalEEMod)™ (v.2016.3.1) was used to estimate project-level operational emissions for the proposed project. Table 2-7 shows the emissions, which include

mobile source, area source, and energy emissions of criteria pollutants that would result from operations of the proposed project.

TABLE 2-7: OPERATIONAL EMISSIONS (UNMITIGATED MAXIMUM DAILY LBS/DAY)

	ROG	NOx	PM_{10} Total	$PM_{2.5}$ Total
Summer				
Area	303.7635	6.0152	51.7384	51.7384
Energy	0.0937	0.8010	0.0648	0.0648
Mobile	5.4914	10.5509	8.0128	2.2144
Total	**309.3486**	**17.3671**	**59.8160**	**54.0175**
Winter				
Area	303.7635	6.0152	51.7384	51.7384
Energy	0.937	0.8010	0.0648	0.0648
Mobile	4.6864	11.7168	8.0134	2.2149
Total	**308.5437**	**18.5330**	**59.8166**	**54.0181**

SOURCES: CALEEMOD (V.2016.3.1) AND PCAPCD CEQA THRESHOLDS OF SIGNIFICANCE JUSTIFICATION REPORT (PCAPCD 2016)

As shown in the table above, operational NOx and PM_{10} emissions are below the thresholds of significance for the individual emission categories (i.e. area, energy, and mobile sources), as well as the total for these categories. The ROG emissions for the Area Source category, as well as the total for all categories, exceed the project-level operational threshold of significance. The PCAPCD has determined that projects with emissions that exceed this threshold level are potentially significant and require mitigation to reduce emissions.

The California Emission Estimator Model (CalEEMod)™ (v.2016.3.1) was used to estimate project-level operational emissions for the proposed project with the implementation of mitigation measures. The primary source of operational emissions that was targeted for mitigation in the model was the area source emissions, which are estimated at 303.7635 lbs/day (maximum daily). Mitigation was entered into the model to reduce the total operational emissions. Mitigation included the following for area source emissions:

- No Hearths
- Energy Efficient Appliances
- Low VOC Paints
- Implement NEV Network (0.5 % - low penetration value of 0.04 NEV/household, equivalent to eight charging stations)

It should be noted that the mitigation model input for low VOC paint (interior and exterior) is a standard requirement in Placer County in accordance with PCAPCD Rule 218, so while it is modeled as mitigation the standard requirement is not identified as a mitigation measure in this report. Table 2-8 shows the project-level operational emissions, which include area, energy, and mobile source emissions that would result from operations of the proposed project with mitigation.

TABLE 2-8: OPERATIONAL EMISSIONS (MITIGATED MAXIMUM DAILY LBS/DAY)

	ROG	NOx	PM_{10} Total	$PM_{2.5}$ Total
Summer				
Area	5.3365	0.1873	0.0886	0.0886
Energy	0.0937	0.8010	0.0648	0.0648
Mobile	5.4785	10.5135	7.9728	2.2033
Total	**10.9087**	**11.5018**	**8.1261**	**2.3567**
Percent Reduction	**96.5%**	**-33.8%**	**-86.4%**	**-95.6%**
Winter				
Area	5.3365	0.1873	0.0886	0.0886
Energy	0.0937	0.8010	0.0648	0.0648
Mobile	4.6726	11.6738	7.9734	2.2039
Total	**10.1028**	**12.6620**	**8.1268**	**2.3573**
Percent Reduction	**-96.7%**	**-31.7%**	**-86.4%**	**-95.6%**

SOURCES: CALEEMOD (V.2016.3.1) AND PCAPCD CEQA THRESHOLDS OF SIGNIFICANCE JUSTIFICATION REPORT (PCAPCD 2016)

As shown in the table above, all emissions are reduced to a level that does not exceed the project-level operational thresholds of significance. With the implementation of the following mitigation measure the proposed project would have a ***less than significant*** impact relative to this topic.

MITIGATION MEASURES

Mitigation Measure 2-1*: To reduce Area Source Emissions, the project applicant shall implement the following:*

- *No wood burning fireplaces/hearths shall be allowed.*

Mitigation Measure 2-2*: To reduce Energy Source Emissions, the project applicant shall implement the following:*

- *Install Energy Efficient Appliances, including fans, refrigeration, dishwashers, and clothes washers.*

Mitigation Measure 2-3*: To reduce Mobile Source Emissions, the project applicant shall implement the following:*

- *Install a total of eight electric vehicle charging stations within the project site. The location of all eight charging stations shall be identified on maps provided to the City of Rocklin. In year one, all eight locations shall have conduit installed and available for installation of the charging stations. Additionally, in year one, four electric vehicle charging stations shall be fully connected and actively available to residents. At the end of year one, the applicant shall evaluate the demand for the four active charging stations and determine whether additional charging stations are warranted based on the demand by the residents. The evaluation shall continue annually until all eight charging stations are fully installed and active. The demand*

evaluation shall be based on a combination of physical observations, electric usage (i.e. bills), and resident surveys. The annual demand evaluation shall be provided to the City of Rocklin.

Impact 2-2: Project construction has the potential to cause a violation of an air quality standard or contribute substantially to an existing or projected air quality violation (less than significant)

Construction activities would result in temporary short-term emissions associated with vehicle trips from construction workers, operation of construction equipment, and the dust generated during construction activities. These temporary and short-term emissions would generate additional ozone precursors (ROG and NOx) as well as PM_{10} and $PM_{2.5}$. Table 2-9 provides the threshold of significance for ROG, NOX, and PM10. There is no threshold established for $PM_{2.5}$.

TABLE 2-9: CONSTRUCTION EMISSION THRESHOLDS

Year	ROG	NOx	PM_{10}	$PM_{2.5}$
Threshold	82 lbs/day	82 lbs/day	82 lbs/day	N/A

SOURCE: PCAPCD CEQA THRESHOLDS OF SIGNIFICANCE JUSTIFICATION REPORT (PCAPCD 2016)

The California Emission Estimator Model (CalEEMod)™ (v.2016.3.1) was used to estimate construction emissions for the proposed project. Table 2-10 shows the construction emissions for the construction years 2018 and 2019.

TABLE 2-10: CONSTRUCTION EMISSIONS (UNMITIGATED MAXIMUM DAILY LBS/DAY)

	ROG	NOx	PM_{10} Total	$PM_{2.5}$ Total
2018 (Summer)	12.0013	59.5767	20.7920	12.3416
2018 (Winter)	11.9830	59.5907	20.7920	12.3416
2019 (Summer)	14.4489	62.7993	3.8481	3.2224
2019 (Winter)	14.4405	62.8367	3.8481	3.2224

SOURCES: CALEEMOD (V.2016.3.1) AND CEQA AIR QUALITY HANDBOOK ASSESSING AND MITIGATING AIR QUALITY IMPACTS FOR PROJECTS UNDER CEQA (PCAPCD 2012)

As shown in the table above, the construction emissions in the 2018 and 2019 construction season (winter and summer) do not exceed the PCAPCD thresholds of significance. All emissions are below the project-level thresholds of significance and the proposed project would have a ***less than significant*** impact.

MITIGATION MEASURES

None Required.

Impact 2-3: Project operations have the potential to cumulatively contribute to a violation of an air quality standard (less than significant with mitigation)

The PCAPCD has historically recommended 10 lbs per day as the cumulative thresholds for land use projects in Placer County. This threshold was established to identify a threshold for the implementation of BACT for stationary sources, and mitigation measures or other sources when the threshold is exceeded. However, the cumulative thresholds were updated by the recent *PCAPCD CEQA Thresholds of Significance Justification Report*, which are presented in Table 2-11.

The District does not recommend the use of this cumulative threshold to determine the need for an EIR. Rather, this threshold is used by the District to recommend mitigation measures to offset the project's cumulative air quality impacts. Table 2-11 presents the PCAPCD's cumulative thresholds.

TABLE 2-11: OPERATIONAL PHASE CUMULATIVE EMISSION THRESHOLDS

	ROG	NOx	PM_{10}	$PM_{2.5}$
Threshold	55 lbs/day	55 lbs/day	82 lbs/day	N/A

SOURCE: PCAPCD CEQA THRESHOLDS OF SIGNIFICANCE JUSTIFICATION REPORT (PCAPCD 2016)

As previously discussed, the California Emission Estimator Model (CalEEMod)™ (v.2016.3.1) was used to estimate project-level operational emissions for the proposed project. Mitigation was entered into the model to reduce the total operational emissions. Mitigation included the following for area source emissions:

- No Hearths
- Energy Efficient Appliances
- Low VOC Paints
- Implement NEV Network (0.5 % - low penetration value of 0.04 NEV/household, equivalent to eight charging stations)

It should be noted that the mitigation model input for low VOC paint (interior and exterior) is a standard requirement in Placer County in accordance with PCAPCD Rule 218, so while it is modeled as mitigation the standard requirement is not identified as a mitigation measure in this report. Table 2-12 shows the project-level operational emissions, which include area, energy, and mobile source emissions that would result from operations of the proposed project with mitigation.

TABLE 2-12: OPERATIONAL EMISSIONS (MITIGATED MAXIMUM DAILY LBS/DAY)

	ROG	NOx	PM_{10} Total	$PM_{2.5}$ Total
Summer				
Area	5.3365	0.1873	0.0886	0.0886
Energy	0.0937	0.8010	0.0648	0.0648
Mobile	5.4785	10.5135	7.9728	2.2033
Total	**10.9087**	**11.5018**	**8.1261**	**2.3567**
Percent Reduction	**96.5%**	**-33.8%**	**-86.4%**	**-95.6%**
Winter				
Area	5.3365	0.1873	0.0886	0.0886
Energy	0.0937	0.8010	0.0648	0.0648
Mobile	4.6726	11.6738	7.9734	2.2039
Total	**10.1028**	**12.6620**	**8.1268**	**2.3573**
Percent Reduction	**-96.7%**	**-31.7%**	**-86.4%**	**-95.6%**

SOURCES: CALEEMOD (V.2016.3.1) AND PCAPCD CEQA THRESHOLDS OF SIGNIFICANCE JUSTIFICATION REPORT (PCAPCD 2016)

As shown in the table above, all emissions are reduced to a level that does not exceed the cumulative-level operational thresholds of significance. With the implementation of the following mitigation measure the proposed project would have a ***less than significant*** impact relative to this topic.

MITIGATION MEASURES

*Implement **Mitigation Measure 2-1, 2-2, and 2-3**.*

Impact 2-4: Carbon monoxide hotspot impacts (less than significant)

Project traffic would increase concentrations of carbon monoxide along streets providing access to the project site. Carbon monoxide is a local pollutant (i.e., high concentrations are normally only found very near sources). The major source of carbon monoxide, a colorless, odorless, poisonous gas, is automobile traffic. Elevated concentrations (i.e. hotspots), therefore, are usually only found near areas of high traffic volume and congestion.

The CO screening approach outlined in the Placer County Air Pollution Control District's *CEQA Air Quality Handbook Assessing and Mitigating Air Quality Impacts for Projects Under CEQA* (2012) has been traditionally used to estimate whether or not a proposed project's traffic impact would cause a potential CO hotspot. The CO screening approach uses the following screening criteria:

- A traffic study for the project indicates that the peak-hour Level of Service (LOS) on one or more streets or at one or more intersections (both signalized and non-signalized) in the project vicinity will be degraded from an acceptable LOS (e.g., A, B, C, or D) to an unacceptable LOS (e.g., LOS E or F); or
- A traffic study indicates that the project will substantially worsen an already existing unacceptable peak-hour LOS on one or more streets or at one or more intersections in the

project vicinity. "Substantially worsen" includes situations where delay would increase by 10 seconds or more when project-generated traffic is included.

If the answer to one or both of these screening criteria is "yes", then the proposed project can be said to have the potential to create a violation of the CO standard and further modeling is warranted. If the answer to the screening criteria is "no", then further modeling is not warranted and the proposed project would not create a violation of the CO standard.

The *Sierra Gateway Apartments Project Level of Service Analysis* (Omni Means 2017) examined Level of Service (LOS) for the road segments and intersections affected by the proposed project. The traffic study indicates that the Sierra College Blvd/Rocklin Road intersection would operate at an LOS of D under the Short Term No Project and Short Term Plus Project conditions during the PM peak hour, but would deteriorate to an LOS E under the Short Term Plus Project with Outbound Access from Water Lily Lane condition during the PM peak hour. Therefore, this intersection would cause the proposed project to not screen out under the CO screening approach outlined in the Placer County Air Pollution Control District's *CEQA Air Quality Handbook Assessing and Mitigating Air Quality Impacts for Projects Under CEQA* (2012).

The PCAPCD is currently in the process of updating their CO guidelines[1] and the PCAPCD has advised that the potential for a CO hotspot should be analyzed based on whether or not the proposed project would generate more than a maximum daily emission of 550 pounds of CO. If the project were to generate greater than this level of CO emissions during project operations, the proposed project would be considered to have a high potential for generating a CO hotspot, and therefore further analysis would be required. If the project were to generate equal to or less than a maximum daily emission of 550 pounds of CO during project operations, then further analysis would not be required (PCAPCD, 2017). Given that the proposed project would not generate greater than 436.0614 pounds/day of CO emissions under the unmitigated scenario, and no greater than 67.4809 pounds/day of CO emissions under the mitigated scenario (as provided by CalEEMod; See Appendices A and B), the proposed project would not be required to undergo further CO hotspot analysis.

Furthermore, as described by the *Sierra Gateway Apartments Project Level of Service Analysis* (Omni Means 2017), the Rocklin GP EIR previously forecasted LOS E conditions at the intersection of Sierra College Boulevard/Rocklin Road (the affected intersection) in the Cumulative Conditions (Table 4.4-29 of the Rocklin GP EIR). Page 4.4-76 of the Rocklin GP EIR identified a mitigation measure (eastbound free right turn lane and westbound right turn lane) and a southbound free right turn lane that would result in acceptable (D or better) LOS operations at this intersection. Therefore, although the Sierra College Blvd/Rocklin Road intersection has been forecasted to undergo a degradation of LOS in the short-term, this degradation of LOS at the affected intersection is expected to be remedied in the long-term.

[1] Phone correspondence with Dr. Yushuo Chang, Senior Planner at the PCAPCD, at 1pm on 4/12/2017.

Given that the proposed project project is within an attainment area for carbon monoxide (ambient air quality standards are currently attained) and in an area with low background concentrations, and given the proposed project would not generate maximum daily emissions of greater than 550 pounds of CO during project operations, the potential for a carbon monoxide hotspot impact represents a ***less than significant*** impact.

Impact 2-5: Potential for public exposure to toxic air contaminants (less than significant)

A toxic air contaminant (TAC) is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air. However, their high toxicity or health risk may pose a threat to public health even at very low concentrations. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. This contrasts with the criteria pollutants for which acceptable levels of exposure can be determined and for which the state and federal governments have set ambient air quality standards.

The California Air Resources Board (CARB) published the *Air Quality and Land Use Handbook: A Community Health Perspective* (2007) to provide information to local planners and decision-makers about land use compatibility issues associated with emissions from industrial, commercial and mobile sources of air pollution. The CARB Handbook indicates that mobile sources continue to be the largest overall contributors to the State's air pollution problems, representing the greatest air pollution health risk to most Californians. The most serious pollutants on a statewide basis include diesel exhaust particulate matter (diesel PM), benzene, and 1,3-butadiene, all of which are emitted by motor vehicles. These mobile source air toxics are largely associated with freeways and high traffic roads. Non-mobile source air toxics are largely associated with industrial and commercial uses. Table 2-13 provides the California Air Resources Board minimum separation recommendations on siting sensitive land uses.

TABLE 2-13: CARB MINIMUM SEPARATION RECOMMENDATIONS ON SITING SENSITIVE LAND USES

Source Category	*Advisory Recommendations*
Freeways and High-Traffic Roads	• Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.[1]
Distribution Centers	• Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week). • Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.
Rail Yards	• Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard. • Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.
Ports	• Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the CARB on the status of pending analyses of health risks.
Refineries	• Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome Platers	• Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloro- ethylene	• Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district. • Do not site new sensitive land uses in the same building with perc dry cleaning operations.
Gasoline Dispensing Facilities	• Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.

SOURCES: AIR QUALITY AND LAND USE HANDBOOK: A COMMUNITY HEALTH PERSPECTIVE" (CARB 2005)

The proposed project is a residential development project and does not include any of the source categories listed in Table 2-13. There is one source category located in the vicinity of the project site (freeways). Interstate 80 is located approximately 3,500 feet to the northeast of the project site. This is beyond the 500 foot screening distance.

The proposed project is consistent with the *CARB Minimum Separation Recommendations on Siting Sensitive Land Uses* (2005) for gasoline dispensing facilities. There are no other source categories located in the vicinity. Implementation of the proposed project would not result in an increased exposure of sensitive receptors to localized concentrations of TACs. This proposed project would have a ***less than significant*** relative to this topic.

Impact 2-6: Potential for exposure to odors (less than significant)

While offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and the PCAPCD. The general nuisance rule (Heath and Safety Code §41700 and District Rule 205) is the basis for the threshold.

Examples of facilities that are known producers of odors include: Wastewater Treatment Facilities, Chemical Manufacturing, Sanitary Landfill, Fiberglass Manufacturing, Transfer Station, Painting/Coating Operations (e.g. auto body shops), Composting Facility, Food Processing Facility, Petroleum Refinery, Feed Lot/Dairy, Asphalt Batch Plant, and Rendering Plant. Table 2-14 provides

the PCAPCD's recommended odor screening distances and suggested buffer distances for a variety of odor-generating facilities.

TABLE 2-14: PCAPCD ODOR SCREENING DISTANCES

Land Use/Type of Operation	*Project Screening Distance*
Wastewater Treatment Plant	2 miles
Wastewater Pumping Facilities	1 mile
Sanitary Landfill	2 miles
Transfer Station	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	2 miles
Chemical Manufacturing	2 miles
Fiberglass Manufacturing	1 mile
Painting/Coating Operations	1 mile
Rendering Plant	2 miles
Coffee Roaster	1 mile
Food Processing Facility	1 mile
Confined Animal Facility/Feed Lot/Dairy	1 mile
Green Waste and Recycling Operations	1 mile
Metal Smelting Plants	2 miles

SOURCE: SMAQMD: CEQA GUIDE TO AIR QUALITY ASSESSMENT, CHAPTER 7, ODORS / RECOMMENDED ODOR SCREENING DISTANCES.

If a project would locate receptors and known odor sources in proximity to each other further analysis may be warranted; however, if a project would not locate receptors and known odor sources in proximity to each other, then further analysis is not warranted. The proposed project is not located in proximity to a known odor source and does not warrant further analysis. Additionally, implementation of the proposed project would not directly create or generate objectionable odors. This impact is considered ***less than significant***.

This chapter discusses regional greenhouse gas (GHG) emissions, climate change, and energy conservation impacts that could result from implementation of the proposed project. This section provides a background discussion of greenhouse gases and climate change linkages and effects of global climate change. This section is organized with an existing setting, regulatory setting, approach/methodology, and impact analysis. The analysis and discussion of the GHG, climate change, and energy conservation impacts in this section focuses on the proposed Project's consistency with local, regional, and statewide climate change planning efforts and discusses the context of these planning efforts as they relate to the proposed project. Disclosure and discussion of the Project's estimated energy usage and greenhouse gas emissions are provided.

3.1 ENVIRONMENTAL SETTING

GREENHOUSE GASES AND CLIMATE CHANGE LINKAGES

Various gases in the Earth's atmosphere, classified as atmospheric GHGs, play a critical role in determining the Earth's surface temperature. Solar radiation enters Earth's atmosphere from space, and a portion of the radiation is absorbed by the Earth's surface. The Earth emits this radiation back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation.

Naturally occurring GHGs include water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3). Several classes of halogenated substances that contain fluorine, chlorine, or bromine are also GHGs, but they are, for the most part, solely a product of industrial activities. Although the direct GHGs, including CO_2, CH_4, and N_2O, occur naturally in the atmosphere, human activities have changed their atmospheric concentrations. From the pre-industrial era (i.e., ending about 1750) to 2011, concentrations of these three GHGs have increased globally by 40, 150, and 20 percent, respectively (IPCC, 2013).

Greenhouse gases, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect. Among the prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), ozone (O_3), water vapor, nitrous oxide (N_2O), and chlorofluorocarbons (CFCs).

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. In California, the transportation sector is the largest emitter of GHGs, followed by the industrial sector (California Energy Commission, 2016).

As the name implies, global climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern, respectively. California produced 441 million gross metric tons of carbon dioxide equivalents ($MMTCO_2e$) in 2014 (California Energy Commission, 2016). By 2020, estimated

business-as-usual greenhouse gas emissions in California are projected to be 509 $MMTCO_2e$ per year (California Air Resources Board, 2015).

Carbon dioxide equivalents are a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential of a GHG, is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

Consumption of fossil fuels in the transportation sector was the single largest source of California's GHG emissions in 2014, accounting for 37% of total GHG emissions in the state. This category was followed by the industrial sector (24%), the electricity generation sector (including both in-state and out of-state sources) (20%) and the agriculture sector (8%) (California Energy Commission, 2016).

EFFECTS OF GLOBAL CLIMATE CHANGE

The effects of increasing global temperature are far-reaching and extremely difficult to quantify. The scientific community continues to study the effects of global climate change. In general, increases in the ambient global temperature as a result of increased GHGs are anticipated to result in rising sea levels, which could threaten coastal areas through accelerated coastal erosion, threats to levees and inland water systems and disruption to coastal wetlands and habitat.

If the temperature of the ocean warms, it is anticipated that the winter snow season would be shortened. Snowpack in the Sierra Nevada provides both water supply (runoff) and storage (within the snowpack before melting), which is a major source of supply for the state. The snowpack portion of the supply could potentially decline by 70 to 90 percent by the end of the 21st century (Cal EPA, 2006).[1] This phenomenon could lead to significant challenges securing an adequate water supply for a growing state population. Further, the increased ocean temperature could result in increased moisture flux into the state; however, since this would likely increasingly come in the form of rain rather than snow in the high elevations, increased precipitation could lead to increased potential and severity of flood events, placing more pressure on California's levee/flood control system.

Sea level has risen approximately seven inches during the last century and it is predicted to rise more in the future. Some estimates anticipate a rise of an additional 22 to 35 inches by 2100, depending on the future GHG emissions levels (Cal EPA, 2006). A recent estimate (2013) by the Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT) anticipates that sea-levels south of the Cape Mendocino could rise between 16.56 inches (1.38 ft) to 65.76

[1] California Environmental Protection Agency, Climate Action Team. 2006. Climate Action Team Report to Governor Schwarzenegger and the Legislature. http://www.climatechange.ca.gov/climate_action_team/reports/.

inches (5.48 ft). If this occurs, resultant effects could include increased coastal flooding, saltwater intrusion and disruption of wetlands (Cal EPA, 2006). As the existing climate throughout California changes over time, mass migration of species, or failure of species to migrate in time to adapt to the perturbations in climate, could also result. Under the emissions scenarios of the Climate Scenarios report (Cal EPA, 2006), the impacts of global warming in California are anticipated to include, but are not limited to, the following.

Public Health

Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation are projected to increase from 25% to 35% under the lower warming range and to 75% to 85% under the medium warming range. In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances depending on wind conditions. The Climate Scenarios report indicates that large wildfires could become up to 55% more frequent if GHG emissions are not significantly reduced.

In addition, under the higher warming scenario, there could be up to 100 more days per year with temperatures above 90°F in Los Angeles and 95°F in Sacramento by 2100. This is a large increase over historical patterns and approximately twice the increase projected if temperatures remain within or below the lower warming range. Rising temperatures will increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

Water Resources

A vast network of man-made reservoirs and aqueducts capture and transport water throughout the state from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada snow pack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snow pack, increasing the risk of summer water shortages.

The state's water supplies are also at risk from rising sea levels. An influx of saltwater would degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta, a major state fresh water supply. Global warming is also projected to seriously affect agricultural areas, with California farmers projected to lose as much as 25% of the water supply they need; decrease the potential for hydropower production within the state (although the effects on hydropower are uncertain); and seriously harm winter tourism. Under the lower warming range, the snow dependent winter recreational season at lower elevations could be reduced by as much as one month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing, snowboarding, and other snow dependent recreational activities.

If GHG emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snow pack by as much as 70% to 90%. Under the lower warming scenario, snow pack losses are expected to be only half as large as those expected if temperatures were to rise to the higher warming range. How much snow pack will be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snow pack would pose challenges to water managers, hamper hydropower generation, and nearly eliminate all skiing and other snow-related recreational activities.

Agriculture

Increased GHG emissions are expected to cause widespread changes to the agriculture industry reducing the quantity and quality of agricultural products statewide. Although higher carbon dioxide levels can stimulate plant production and increase plant water-use efficiency, California's farmers will face greater water demand for crops and a less reliable water supply as temperatures rise.

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than-optimal development for many crops, so rising temperatures are likely to worsen the quantity and quality of yield for a number of California's agricultural products. Products likely to be most affected include wine grapes, fruits and nuts, and milk.

Crop growth and development will be affected, as will the intensity and frequency of pest and disease outbreaks. Rising temperatures will likely aggravate ozone pollution, which makes plants more susceptible to disease and pests and interferes with plant growth.

In addition, continued global warming will likely shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion is expected in many species while range contractions are less likely in rapidly evolving species with significant populations already established. Should range contractions occur, it is likely that new or different weed species will fill the emerging gaps. Continued global warming is also likely to alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates.

Forests and Landscapes

Global warming is expected to alter the distribution and character of natural vegetation thereby resulting in a possible increased risk of large of wildfires. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55%, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the state. For example, if precipitation increases as temperatures rise, wildfires in southern California are expected to increase by approximately 30% toward the end of the century. In contrast, precipitation decreases could increase wildfires in northern California by up to 90%.

Moreover, continued global warming will alter natural ecosystems and biological diversity within the state. For example, alpine and sub-alpine ecosystems are expected to decline by as much as 60% to 80% by the end of the century as a result of increasing temperatures. The productivity of the state's forests is also expected to decrease as a result of global warming.

Rising Sea Levels

Rising sea levels, more intense coastal storms, and warmer water temperatures will increasingly threaten the state's coastal regions. Under the higher warming scenario, sea level is anticipated to rise between 16.56 inches (1.38 ft) to 65.76 inches (5.48 ft) by 2100. Elevations of this magnitude would inundate coastal areas with saltwater, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.

ENERGY CONSUMPTION

Energy is California is consumed from a wide variety of sources. Fossil fuels (including gasoline and diesel fuel, natural gas, and energy used to generate electricity) are most widely used form of energy in the State. However, renewable source of energy (such as solar and wind) are growing in proportion to California's overall energy mix. A large driver of renewable sources of energy in California is the State's current Renewable Portfolio Standard (RPS), which requires the State to derive at least 33% of electricity generated from renewable resources by 2020, and 50 percent by 2030.

Overall, in 2013, California ranked as the third-most energy efficient state in the nation (U.S. EIA, 2016). California's per capita rate of energy usage has remained relatively constant since the 1970's. Many State regulations since the 1970's, including new building energy efficiency standards, vehicle fleet efficiency measures, as well as growing public awareness, have helped to keep per capita energy usage in the State in check.

The consumption of nonrenewable energy (primarily gasoline and diesel fuel) associated with the operation of passenger, public transit, and commercial vehicles results in GHG emissions that ultimately result in global climate change. Alternative fuels such as natural gas, ethanol, and electricity (unless derived from solar, wind, nuclear, or other energy sources that do not produce carbon emissions) also result in GHG emissions and contribute to global climate change.

Electricity Consumption

California relies on a regional power system composed of a diverse mix of natural gas, renewable, hydroelectric, and nuclear generation resources. Approximately 71 percent of the electrical power needed to meet California's demand is produced in the state. Approximately 29 percent of its electricity demand is imported from the Pacific Northwest and the Southwest (California Energy Commission, 2012)[2]. In 2010, California's in-state generated electricity was derived from natural

[2] California Energy Commission (2012). Energy Almanac. Retrieved August 2012, from http://energyalmanac.ca.gov/overview/index.html.

gas (53.4 percent), large hydroelectric resources (14.6 percent), coal (1.7 percent), nuclear sources (15.7 percent), and renewable resources that include geothermal, biomass, small hydroelectric resources, wind, and solar (14.6 percent) (California Energy Commission, 2012).

According to the California Energy Commission (CEC), total statewide electricity consumption increased from 166,979 gigawatt-hours (GWh) in 1980 to 228,038 GWh in 1990, which is an estimated annual growth rate of 3.66 percent. The statewide electricity consumption in 1997 was 246,225 GWh, reflecting an annual growth rate of 1.14 percent between 1990 and 1997 (California Energy Commission Energy Almanac, 2012). Statewide consumption was 274,985 GWh in 2010, an annual growth rate of 0.9 percent between 1997 and 2010.

Oil

The primary energy source for the United States is oil, which is refined to produce fuels like gasoline, diesel, and jet fuel. Oil is a finite, nonrenewable energy source. World consumption of petroleum products has grown steadily in the last several decades. As of 2009, world consumption of oil had reached 96 million barrels per day. The United States, with approximately five percent of the world's population, accounts for approximately 19 percent of world oil consumption, or approximately 18.6 million barrels per day (The World Factbook 2009, Washington, DC: Central Intelligence Agency, 2009). The transportation sector relies heavily on oil. In California, petroleum based fuels currently provide approximately 96 percent of the state's transportation energy needs (California Energy Commission, 2012).

Natural Gas/Propane

The state produces approximately 12 percent of its natural gas, while obtaining 22 percent from Canada and 65 percent from the Rockies and the Southwest (California Energy Commission, 2012). In 2006, California produced 325.6 billion cubic feet of natural gas (California Energy Commission, 2012).

CITY OF ROCKLIN GHG EMISSIONS

GHG emissions were quantified during the preparation of the City of Rocklin General Plan. It was found that implementation of the General Plan would result in cumulatively considerable GHG emissions. The GHG emissions baseline inventory for 2008 and forecasts for 2020 and 2030 under a business as usual approach are shown in Tables 3-1. This table includes total emissions and per capita emissions by sector.

TABLE 3-1: GHG EMISSIONS INVENTORY/FORECASTS FOR 2008, 2020, AND 2030*

Sector	*Metric Tons CO_2e*	*Per Capita (CO_2e/Service Population)*	*% Change*
Year 2008 (Baseline)			
Energy	192,188	2.81	--
Transportation	234,207	3.42	--
Waste	1,605	0.02	--
Total	**428,000**	**6.26**	**--**
Year 2020			
Energy	255,439	2.71	(+33%)
Transportation	393,971	4.18	(+68%)
Waste	2,188	0.02	(+36%)
Total	**651,598**	**6.92**	**(+52%)**
Year 2030			
Energy	305,046	2.93	(+59%)
Transportation	561,863	5.41	(+140%)
Waste	2,270	0.02	(+41%)
Total	**869,179**	**8.37**	**(+103%)**

**NOTE: THESE GHG NUMBER ASSUME A GENERAL PLAN BASELINE YEAR OF 2008 AND FORECASTS YEARS OF 2020 AND 2030 UNDER A BUSINESS AS USUAL APPROACH (I.E. WITHOUT IMPLEMENTATION OF THE CLIMATE ACTION PLAN).*

SOURCE: CITY OF ROCKLIN GENERAL PLAN DRAFT EIR (2011).

Including all sectors, the community emitted approximately 428,001 metric tons of CO_2e in 2008 and was forecast to emit 651,598 metric tons of CO_2e in 2020 and 869,179 metric tons of CO_2e in 2030 under a business as usual approach. This represents a total increase of 103 percent from 2008 to 2030 business as usual conditions.

As shown in Table 3-1, the transportation sector is the single largest source of projected GHG emissions in the city. The City of Rocklin is committed to reducing GHG emissions as development occurs by addressing GHG emissions on a project-by-project basis through the CEQA review process. As a part of such commitment, the City has adopted General Plan goal and policies from the *California Air Pollution Control Officers (CAPCOA) Model Policies for Greenhouse Gases in General Plans* (June 2009) in addition to other that collectively would help reduce greenhouse gas emissions.

3.2 REGULATORY SETTING

FEDERAL

Clean Air Act

The Federal Clean Air Act (FCAA) was first signed into law in 1970. In 1977, and again in 1990, the law was substantially amended. The FCAA is the foundation for a national air pollution control effort, and it is composed of the following basic elements: NAAQS for criteria air pollutants, hazardous air pollutant standards, state attainment plans, motor National Ambient Air Quality

Standards (NAAQS) vehicle emissions standards, stationary source emissions standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions.

The EPA is responsible for administering the FCAA. The FCAA requires the EPA to set NAAQS for several problem air pollutants based on human health and welfare criteria. Two types of NAAQS were established: primary standards, which protect public health, and secondary standards, which protect the public welfare from non-health-related adverse effects such as visibility reduction.

Energy Policy and Conservation Act

The Energy Policy and Conservation Act of 1975 sought to ensure that all vehicles sold in the U.S. would meet certain fuel economy goals. Through this Act, Congress established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the Act, the National Highway Traffic and Safety Administration, which is part of the U.S. Department of Transportation (USDOT), is responsible for establishing additional vehicle standards and for revising existing standards.

Since 1990, the fuel economy standard for new passenger cars has been 27.5 mpg. Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 mpg. Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not currently subject to fuel economy standards. Compliance with federal fuel economy standards is determined on the basis of each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the U.S. The Corporate Average Fuel Economy (CAFE) program, which is administered by the EPA, was created to determine vehicle manufacturers' compliance with the fuel economy standards. The EPA calculates a CAFE value for each manufacturer based on city and highway fuel economy test results and vehicle sales. Based on the information generated under the CAFE program, the USDOT is authorized to assess penalties for noncompliance.

Energy Policy Act of 1992 (EPAct)

The Energy Policy Act of 1992 (EPAct) was passed to reduce the country's dependence on foreign petroleum and improve air quality. EPAct includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. EPAct requires certain federal, state, and local government and private fleets to purchase a percentage of light duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are included in EPAct. Federal tax deductions will be allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the act to consider a variety of incentive programs to help promote AFVs.

Energy Policy Act of 2005

The Energy Policy Act of 2005 was signed into law on August 8, 2005. Generally, the act provides for renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for a clean renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.

Intermodal Surface Transportation Efficiency Act (ISTEA)

ISTEA (49 U.S.C. § 101 et seq.) promoted the development of intermodal transportation systems to maximize mobility as well as address national and local interests in air quality and energy. ISTEA contained factors that metropolitan planning organizations (MPOs), such as SACOG, were to address in developing transportation plans and programs, including some energy-related factors. To meet the ISTEA requirements, MPOs adopted explicit policies defining the social, economic, energy, and environmental values that were to guide transportation decisions in that metropolitan area. The planning process was then to address these policies. Another requirement was to consider the consistency of transportation planning with federal, state, and local energy goals. Through this requirement, energy consumption was expected to become a criterion, along with cost and other values that determine the best transportation solution.

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)

SAFETEA-LU (23 U.S.C. § 507), renewed the Transportation Equity Act for the 21st Century (TEA-21) of 1998 (23 U.S.C.; 49 U.S.C.) through FY 2009. SAFETEA-LU authorized the federal surface transportation programs for highways, highway safety, and transit. SAFETEA-LU addressed the many challenges facing our transportation system today—such as improving safety, reducing traffic congestion, improving efficiency in freight movement, increasing intermodal connectivity, and protecting the environment—as well as laying the groundwork for addressing future challenges. SAFETEA-LU promoted more efficient and effective federal surface transportation programs by focusing on transportation issues of national significance, while giving state and local transportation decision makers more flexibility to solve transportation problems in their communities. SAFETEA-LU was extended in March of 2010 for nine months, and expired in December of the same year. In June 2012, SAFETEA-LU was replaced by the Moving Ahead for Progress in the 21st Century Act (MAP-21), which will take effect October 1, 2012.

Federal Climate Change Policy

According to the EPA, "the United States government has established a comprehensive policy to address climate change" that includes slowing the growth of emissions; strengthening science, technology, and institutions; and enhancing international cooperation. To implement this policy, "the Federal government is using voluntary and incentive-based programs to reduce emissions and has established programs to promote climate technology and science." The federal government's goal is to reduce the greenhouse gas (GHG) intensity (a measurement of GHG emissions per unit of economic activity) of the American economy by 18 percent over the 10-year period from 2002 to 2012. In addition, the EPA administers multiple programs that encourage voluntary GHG reductions, including "ENERGY STAR", "Climate Leaders", and Methane Voluntary Programs. However, as of this writing, there are no adopted federal plans, policies, regulations, or laws directly regulating GHG emissions.

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, EPA issued a final rule for mandatory reporting of GHGs from large GHG emissions sources in the United States. In general, this national reporting requirement will provide EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons or more of CO_2 per year. This publically available data will allow the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost effective opportunities to reduce emissions in the future. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial greenhouse gases along with vehicle and engine manufacturers will report at the corporate level. An estimated 85% of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule.

STATE

Assembly Bill 1493

In response to AB 1493, CARB approved amendments to the California Code of Regulations (CCR) adding GHG emission standards to California's existing motor vehicle emission standards. Amendments to CCR Title 13 Sections 1900 (CCR 13 1900) and 1961 (CCR 13 1961), and adoption of Section 1961.1 (CCR 13 1961.1) require automobile manufacturers to meet fleet average GHG emission limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes beginning with the 2009 model year. Emission limits are further reduced each model year through 2016. For passenger cars and light-duty trucks 3,750 pounds or less loaded vehicle weight (LVW), the 2016 GHG emission limits are approximately 37 percent lower than during the first year of the regulations in 2009. For medium-duty passenger vehicles and light-duty trucks 3,751 LVW to 8,500 pounds gross vehicle weight (GVW), GHG emissions are reduced approximately 24 percent between 2009 and 2016.

CARB requested a waiver of federal preemption of California's Greenhouse Gas Emissions Standards. The intent of the waiver is to allow California to enact emissions standards to reduce carbon dioxide and other greenhouse gas emissions from automobiles in accordance with the regulation amendments to the CCRs that fulfill the requirements of AB 1493. The EPA granted a waiver to California to implement its greenhouse gas emissions standards for cars.

Assembly Bill 1007

Assembly Bill 1007, (Pavley, Chapter 371, Statutes of 2005) directed the CEC to prepare a plan to increase the use of alternative fuels in California. As a result, the CEC prepared the State Alternative Fuels Plan in consultation with the state, federal, and local agencies. The plan presents strategies and actions California must take to increase the use of alternative non-petroleum fuels in a manner that minimizes costs to California and maximizes the economic benefits of in-state production. The Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce greenhouse gas emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

Bioenergy Action Plan – Executive Order #S-06-06

Executive Order #S-06-06 establishes targets for the use and production of biofuels and biopower and directs state agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The executive order establishes the following target to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its biofuels within California by 2010, 40 percent by 2020, and 75 percent by 2050. The executive order also calls for the state to meet a target for use of biomass electricity.

California Executive Orders S-3-05 and S-20-06, and Assembly Bill 32

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: 1) 2000 levels by 2010, 2) 1990 levels by the 2020 and 3) 80% below the 1990 levels by the year 2050.

In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that CARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

EO S-13-08

EO S-13-08 was issued on November 14, 2008. The EO is intended to hasten California's response to the impacts of global climate change, particularly sea level rise, and directs state agencies to take specified actions to assess and plan for such impacts, including requesting the National Academy of Sciences to prepare a Sea Level Rise Assessment Report, directing the Business, Transportation, and Housing Agency to assess the vulnerability of the State's transportation systems to sea level rise, and requiring the Office of Planning and Research and the Natural Resources Agency to provide land use planning guidance related to sea level rise and other climate change impacts.

The order also required State agencies to develop adaptation strategies to respond to the impacts of global climate change that are predicted to occur over the next 50 to 100 years. The adaption strategies report summarizes key climate change impacts to the State for the following areas: public health; ocean and coastal resources; water supply and flood protection; agriculture; forestry; biodiversity and habitat; and transportation and energy infrastructure. The report recommends strategies and specific responsibilities related to water supply, planning and land use, public health, fire protection, and energy conservation.

Assembly Bill 32- Climate Change Scoping Plan

2008 Climate Change Scoping Plan: On December 11, 2008 ARB adopted its *Climate Change Scoping Plan* (2008 Scoping Plan), which functions as a roadmap of ARB's plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. The 2008

Scoping Plan contains the main strategies California has implemented to reduce CO_2e emissions by 169 million metric tons (MMT), or approximately 30 percent, from the state's projected 2020 emissions level of 596 MMT of CO_2e under a business-as-usual scenario. (This is a reduction of 42 MMT CO_2e, or almost 10 percent, from 2002–2004 average emissions, but requires the reductions in the face of population and economic growth through 2020.) The 2008 Scoping Plan also breaks down the amount of GHG emissions reductions ARB recommends for each emissions sector of the state's GHG inventory. The 2008 Scoping Plan calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards:

- improved emissions standards for light-duty vehicles (estimated reductions of 31.7 MMT CO_2e),
- the Low-Carbon Fuel Standard (15.0 MMT CO_2e),
- energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 MMT CO_2e), and
- a renewable portfolio standard for electricity production (21.3 MMT CO_2e).

First Update to the Climate Change Scoping Plan: In June 2013, CARB kicked off a public process intended develop the First Update to the Climate Change Scoping Plan (2014 Scoping Plan). The public process included: regional workshops, input/advise from stakeholders, advise from the Environmental Justice Advisory Committee, public review and comment of a draft Scoping Plan, and ultimately public hearings. On May 22, 2014, the First Update to the Climate Change Scoping Plan was approved by the Board.

The 2014 Scoping Plan indicates that California is on track to meet the near-term 2020 greenhouse gas limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32. The set of actions the State is taking is driving down greenhouse emissions and moving the State steadily in the direction of a cleaner energy economy. For instance, the 2014 Scoping Plan indicates that currently, about 23 percent of the State's electricity comes from renewable power and that this will increase to at least 33 percent by 2020 under new requirements set in place in 2011. The 2014 Scoping Plan indicates that collectively, the State's set of vehicle, fuels, and land use policies will cut in half emissions from passenger transportation and drivers' fuel costs over the next 20 years. The 2014 Scoping Plan cites California's Low Carbon Fuel Standard (LCFS) and California's vehicle GHG standards (Pavley) as two standards that have, and will continue to, dramatically scale up emission reductions in the future. The 2014 Scoping Plan cites work by regulators on developing a national GHG standard and corresponding fuel efficiency standard for medium- and heavy-duty trucks as well as California's pioneering zero emission vehicles (ZEV) regulation as areas where California is making major strides toward reducing the future GHG emission. The 2014 Scoping Plan indicates that seven Metropolitan Planning Organizations have adopted Sustainable Community Strategies that are intended to help drive GHG emission reductions, by creating more livable communities that offer greater housing and transportation options; improved access to resources and services; safer, more vibrant neighborhoods; and healthier lifestyles where people can live, work, and play without having to travel long distances or sit through congestion. Lastly, the 2014 Scoping Plan cites the Cap-and-Trade Program launched by California, as a program that will ensure that California remains on track to continually reduce

emissions and meet the 2020 limit and play a critical role in keeping California on the right emissions reduction trajectory to meet ongoing reduction targets at the lowest possible cost.

California Strategy to Reduce Petroleum Dependence (AB 2076)

In response to the requirements of AB 2076 (Chapter 936, Statutes of 2000), the CEC and the CARB developed a strategy to reduce petroleum dependence in California. The strategy, *Reducing California's Petroleum Dependence*, was adopted by the CEC and CARB in 2003. The strategy recommends that California reduce on-road gasoline and diesel fuel demand to 15 percent below 2003 demand levels by 2020 and maintain that level for the foreseeable future; the Governor and Legislature work to establish national fuel economy standards that double the fuel efficiency of new cars, light trucks, and sport utility vehicles (SUVs); and increase the use of non- petroleum fuels to 20 percent of on-road fuel consumption by 2020 and 30 percent by 2030.

Climate Action Program at Caltrans

The California Department of Transportation, Business, Transportation, and Housing Agency, prepared a Climate Action Program in response to new regulatory directives. The goal of the Climate Action Program is to promote clean and energy efficient transportation, and provide guidance for mainstreaming energy and climate change issues into business operations. The overall approach to lower fuel consumption and CO_2 from transportation is twofold: (1) reduce congestion and improve efficiency of transportation systems through smart land use, operational improvements, and Intelligent Transportation Systems; and (2) institutionalize energy efficiency and GHG emission reduction measures and technology into planning, project development, operations, and maintenance of transportation facilities, fleets, buildings, and equipment.

The reasoning underlying the Climate Action Program is the conclusion that "the most effective approach to addressing GHG reduction, in the short-to-medium term, is strong technology policy and market mechanisms to encourage innovations. Rapid development and availability of alternative fuels and vehicles, increased efficiency in new cars and trucks (light and heavy duty), and super clean fuels are the most direct approach to reducing GHG emissions from motor vehicles (emission performance standards and fuel or carbon performance standards)."

Governor's Low Carbon Fuel Standard (Executive Order #S-01-07)

Executive Order #S-01-07 establishes a statewide goal to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020 through establishment of a Low Carbon Fuel Standard. The Low Carbon Fuel Standard is incorporated into the State Alternative Fuels Plan and is one of the proposed discrete early action GHG reduction measures identified by CARB pursuant to AB 32.

Senate Bill 97 (SB 97)

Senate Bill 97 (Chapter 185, 2007) required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the State CEQA Guidelines for addressing greenhouse gas emissions. OPR prepared its recommended amendments to the State CEQA Guidelines to provide guidance to public agencies regarding the analysis and mitigation of greenhouse gas

emissions and the effects of greenhouse gas emissions in draft CEQA documents. The Amendments became effective on March 18, 2010.

Senate Bill 375

Sen. Bill No. 375 (Stats. 2008, ch. 728) (SB 375) was built on AB 32 (California's 2006 climate change law). SB 375's core provision is a requirement for regional transportation agencies to develop a Sustainable Communities Strategy (SCS) in order to reduce GHG emissions from passenger vehicles. The SCS is one component of the Regional Transportation Plan (RTP).

The SCS outlines the region's plan for combining transportation resources, such as roads and mass transit, with a realistic land use pattern, in order to meet a state target for reducing GHG emissions. The strategy must take into account the region's housing needs, transportation demands, and protection of resource and farmlands.

Additionally, SB 375 modified the state's Housing Element Law to achieve consistency between the land use pattern outlined in the SCS and the Regional Housing Needs Assessment allocation. The legislation also substantially improved cities' and counties' accountability for carrying out their housing element plans.

Finally, SB 375 amended the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.) to ease the environmental review of developments that help reduce the growth of GHG emissions.

Senate Bill 32 (SB 32)

Senate Bill 32, which passed into law in 2016, sets the target of reducing greenhouse gas emissions to 40 percent below the 1990 level by the year 2030. SB 32 extends the original set of greenhouse gas targets provided by the passage of AB 32 (the Global Warmings Solutions Act of 2006). This new target sets an aggressive goalpost, helping the State along its pathway to achieve its longer term goal of an 80 percent reduction in greenhouse gas emissions by the year 2050.

California Building Energy Efficiency Standards

Title 24, Part 6 of the California Code of Regulations, known as the Building Energy Efficiency Standards, was established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. On January 1, 2010, the California Building Standards Commission adopted CALGreen and became the first state in the United States to adopt a statewide green building standards code. CALGreen requires new buildings to reduce water consumption by 20 percent, divert 50 percent of construction waste from landfills, and install low pollutant-emitting materials.

CEQA Guidelines Appendix F

In order to assure that energy implications are considered in project decisions, CEQA requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular

emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy. The goal of conserving energy implies the wise and efficient use of energy.

LOCAL

City of Rocklin General Plan

The City of Rocklin General Plan establishes the following goals and policies relative to air quality and greenhouse gas emissions in the General Plan:

LAND USE ELEMENT GOALS AND POLICIES

LU-11 Encourage infill residential development that is in keeping with the character and scale of the surrounding neighborhood, while providing a variety of densities and housing types as reflected by the zoning and land use designation of the infill property.

LU-13 Review proposals for new residential development for compatibility with the character and scale of nearby neighborhoods, while providing a variety of densities and housing types as reflected by the zoning and land use designation of the infill property.

LU-68 Adopt and implement land use strategies that utilize existing infrastructure, reduce the need for new roads, utilities and other public works in newly developing areas, and enhance nonautomobile transportation.

LU-69 Encourage high-density, mixed-use, infill development and creative use of brownfield and under-utilized properties.

LU-70 Increase densities in core areas to support public transit.

LU-71 Add bicycle facilities to City streets and public spaces.

LU-72 Promote infill, mixed-use, higher density development and the creation of affordable housing in mixed use zones.

LU-73 Identify sites suitable for mixed-use development within existing service areas and establish appropriate site-specific standards to accommodate the mixed uses.

LU-74 Promote greater linkage between land uses and transit, as well as other modes of transportation.

LU-75 Promote development and preservation of neighborhood characteristics that encourage walking and bicycle riding in lieu of automobile-based travel.

CIRCULATION ELEMENT POLICIES

C-4 Promote the use of non-motorized transportation by providing a system of bicycle routes and pedestrian ways.

C-59 Promote pedestrian convenience and recreational opportunities through development conditions requiring sidewalks, walking paths, or hiking trails connecting various land uses including residential areas, commercial areas, schools, parks, employment centers and open space.

OPEN SPACE, CONSERVATION AND RECREATION ELEMENT POLICIES

OCR-58 Require development projects to incorporate stationary and mobile source control measures recommended by the Placer County Air Pollution Control District and approved by the City for protection of air quality during construction and subsequent operations.

OCR-59 Continue to consult with the Placer County Air Pollution Control District in the development of stationary and mobile source control measures affecting the City of Rocklin.

3.3 IMPACTS AND MITIGATION MEASURES

GREENHOUSE GAS EMISSIONS THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, climate change-related impacts are considered significant if implementation of the proposed project would do any of the following:

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

The PCAPCD recently updated their Greenhouse Gas thresholds, as provided within the *PCAPCD CEQA Thresholds of Significance Justification Report* (October 2016). The PCAPCD, as the lead agency, has chosen to utilize the following significance thresholds for GHGs:

- Bright-line Threshold of 10,000 metric tons of CO_2e per year for the construction and operational phases of land use projects as well as the stationary source projects
- Efficiency Matrix for the operational phase of land use development projects when emissions exceed the De Minimis Level, and
- De Minimis Level for the operational phases of 1,100 metric tons of CO_2e per year.

GHG emissions from projects that exceed 10,000 MT CO_2e/yr would be deemed to have a cumulatively considerable contribution to global climate change. According to the PCAPCD, for a

land use project, this level of emissions is equivalent to a project size of approximately 646 single-family dwelling units, or a 323,955 square feet commercial building.

The De Minimis Level for the operational phases of 1,100 MT CO_2e/yr represents an emissions level which can be considered as less than cumulatively considerable and be excluded from the further GHG impact analysis. This level of emissions is equivalent to a project size of approximately 71 single-family units, or a 35,635 square feet commercial building.

Projects with GHG emissions which exceed the De Minimis Level of 1,100 MT CO_2e/yr, but less than 10,000 MT CO_2e/year can still be found less than cumulatively considerable when the result of project related efficiency analysis would meet one of conditions in the efficiency matrix for the applicable land use setting and land use type provided.

ENERGY CONSERVATION THRESHOLDS OF SIGNIFICANCE

Additionally, per Appendix F of the State CEQA Guidelines, the proposed Project would result in a significant impact on energy use if it would:

- Result in significant adverse impacts related to Project energy requirements, energy use inefficiencies, and/or energy intensiveness of materials by amount and fuel type for each stage of the Project including construction, operations, maintenance, and/or removal;
- Result in significant adverse impacts on local and regional energy supplies and on requirements for additional capacity;
- Result in significant adverse impacts on peak and base period demands for electricity and other forms of energy;
- Fail to comply with existing energy standards;
- Result in significant adverse impacts on energy resources;
- Result in significant adverse impacts related to transportation energy use requirements of the Project and use of transportation alternatives; or
- Conflict, or create an inconsistency, with any applicable plan, policy, or regulation adopted for the purpose of avoiding or mitigating environmental effects related to energy conservation.

In order to determine whether or not the proposed Project would result in a significant impact on energy use, this EIR includes an analysis of proposed Project energy use, provided below.

IMPACTS AND MITIGATION MEASURES

Impact 3-1: Potential to generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment or potential to conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. (less than significant)

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Therefore, the cumulative global emissions of GHGs contributing to global climate change can be attributed to every nation, region, and city, and virtually every individual on Earth. A project's GHG emissions are at a micro-scale relative to global emissions, but could result in a cumulatively considerable incremental contribution to a significant cumulative macro-scale impact. Implementation of the proposed project would contribute to increases of GHG emissions that are associated with global climate change. Estimated GHG emissions attributable to future development would be primarily associated with increases of CO_2 and other GHG pollutants, such as methane (CH_4) and nitrous oxide (N_2O), from mobile sources and utility usage.

The proposed project's short-term construction-related and long-term operational GHG emissions were estimated using the California Emission Estimator Model (CalEEMod)™ (v.2016.3.1). CalEEMod is a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify GHG emissions from land use projects. The model quantifies direct GHG emissions from construction and operation (including vehicle use), as well as indirect GHG emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. Emissions are expressed in annual metric tons of CO_2 equivalent units of measure (i.e., $MTCO_2e$), based on the global warming potential of the individual pollutants.

Short-Term Construction GHG Emissions: Estimated increases in GHG emissions associated with construction of the proposed project are summarized in Table 3-2.

TABLE 3-2: CONSTRUCTION GHG EMISSIONS (UNMITIGATED METRIC TONS/YR)

	Bio-CO_2	*NBio- CO_2*	*Total CO_2*	*CH_4*	*N2O*	*CO_2e*
2018	0.0000	582.4461	582.4461	0.1208	0.0000	585.4654
2019	0.0000	327.9016	327.9016	0.0551	0.0000	329.2801
Total	0.0000	910.3477	910.3477	0.1759	0	914.7455

SOURCES: CALEEMOD (V.2016.3.1)

As presented in the table, short-term construction emissions of GHG associated are estimated to be 914.7455 $MTCO_2e$. Construction GHG emissions are a one-time release and are, therefore, not typically expected to generate a significant contribution to global climate change in the long-term. Due to the size of the proposed project, the project's estimated construction-related GHG

contribution to global climate change would be considered negligible on the overall global emissions scale.

Long-Term Operational GHG Emissions: The long-term operational GHG emissions estimate for the proposed project incorporates the project's potential area source and vehicle emissions, and emissions associated with utility and water usage, and wastewater and solid waste generation. The modeling reflects a loss of carbon sequestration from the loss of existing trees and vegetation; however, it does not reflect any benefits of carbon sequestration from the installation of new landscaping. Not including the carbon sequestration benefits of new landscaping results in a slight overestimate of the total carbon emissions of the proposed Project.

As described previously, the PCAPCD recently updated their Greenhouse Gas thresholds, as provided within the *PCAPCD CEQA Thresholds of Significance Justification Report* (October 2016). The PCAPCD, as the lead agency, has chosen to utilize the following significance thresholds for GHGs:

1) Bright-line Threshold of 10,000 metric tons of CO_2e per year for the construction and operational phases of land use projects as well as the stationary source projects

2) Efficiency Matrix for the operational phase of land use development projects when emissions exceed the De Minimis Level, and

3) De Minimis Level for the operational phases of 1,100 metric tons of CO_2e per year.

GHG emissions from projects that exceed 10,000 MT CO_2e/yr would be deemed to have a cumulatively considerable contribution to global climate change. According to the PCAPCD, for a land use project, this level of emissions is equivalent to a project size of approximately 646 single-family dwelling units, or a 323,955 square feet commercial building.

The De Minimis Level for the operational phases of 1,100 MT CO_2e/yr represents an emissions level which can be considered as less than cumulatively considerable and be excluded from the further GHG impact analysis. This level of emissions is equivalent to a project size of approximately 71 single-family units, or a 35,635 square feet commercial building.

Projects with GHG emissions which exceed the De Minimis Level of 1,100 MT CO_2e/yr, but less than 10,000 MT CO_2e/year can still be found less than cumulatively considerable when the result of project related efficiency analysis would meet one of conditions in the efficiency matrix for the applicable land use setting and land use type provided.

Given that the proposed project is a residential project within an urban setting, the appropriate efficiency matrix threshold for the proposed project is 4.5 MT CO_2e/capita.

Table 3-3 presents the proposed project's unmitigated operational GHG emissions, and Table 3-4 presents the proposed project's mitigated operational GHG emissions.

TABLE 3-3: OPERATIONAL GHG EMISSIONS (UNMITIGATED METRIC TONS/YR)

Category	*Bio- CO_2*	*NBio- CO_2*	*Total CO_2*	*CH_4*	*N2O*	*CO_2e*
Area	201.4268	86.8406	288.2673	0.1882	0.0158	297.6939
Energy	0.0000	443.3625	443.3625	0.0156	5.6700e-003	445.4423
Mobile	0.0000	1,521.3285	1,521.3285	0.1023	0.0000	1,523.8865
Waste	18.2083	0.0000	18.2083	1.0761	0.0000	45.1103
Water	4.0307	28.1547	32.1854	0.4153	0.0100	45.5586
Total	223.6658	2,079.6862	2,303.3520	1.7975	0.0316	2,357.6913

SOURCES: CALEEMOD (V.2016.3.1)

TABLE 3-4: OPERATIONAL GHG EMISSIONS (MITIGATED METRIC TONS/YR)

Category	*Bio- CO_2*	*NBio- CO_2*	*Total CO_2*	*CH_4*	*N2O*	*CO_2e*
Area	0.0000	2.3651	2.3651	2.3200e-003	0.0000	2.4232
Energy	0.0000	437.1712	437.1712	0.0154	5.6100e-003	439.2268
Mobile	0.0000	1,514.082	1,514.082	0.1019	0.0000	1,516.629
Waste	18.2083	0.0000	18.2083	1.0761	0.0000	45.1103
Water	4.0307	28.1547	32.1854	0.4153	0.0100	45.5586
Total	22.2390	1,981.773	2,004.012	1.6109	0.0157	2,048.9479

SOURCES: CALEEMOD (V.2016.3.1)

As shown in Tables 3-3 and 3-4, the proposed project's operational GHG emissions would equal 2,357.6913 MT CO_2e under the unmitigated scenario and 2,048.9470 MT CO_2e under the mitigated scenario. Therefore, even with mitigation incorporated, the proposed project's operational GHG emissions would exceed the PCAPCD's De Minimis threshold of 1,100 metric tons of CO_2e per year.

As previously stated, the PCAPCD has provided a per capita emissions threshold (the Efficiency Matrix threshold) that would be applicable to a project if it were to exceed the De Minimis threshold but not exceed the 10,000 MT CO_2e/year bright light threshold. If the Efficiency Matrix threshold were to be met by the proposed project, the proposed project would be considered to have a less than significant impact with regard to GHG emissions and would be excluded from further GHG impact analysis.

The proposed project would include 195 units, consisting of 104 one bedroom units, 82 two bedroom units, and 9 three bedroom units. The most recent City of Rocklin Housing Element (the *City of Rocklin 2013-2021 Housing Element*) identified that the average household size in Rocklin in 2012 was 2.73. Therefore, under the assumption that the proposed project would have approximately the same average household size as the average for the City of Rocklin, the proposed project would generate approximately 532 new residents. Given this number of new residents, the unmitigated per capita emissions of the proposed project would be 4.43 MT CO_2e/capita and the mitigated per capita emissions of the proposed project would be 3.85 MT CO_2e/capita. Both the unmitigated and mitigated projected per capita emissions of the proposed project would be lower than the applicable PCAPCD per capita emissions threshold of 4.5 MT CO_2e/capita.

Conclusion: Short-term construction GHG emissions are a one-time release of GHGs and are not expected to significantly contribute to global climate change over the lifetime of the proposed project. Operational GHG emissions are subject to the PCAPCD's GHG thresholds. The proposed project would not exceed the applicable PCAPCD per capita emissions threshold of 4.5 MT CO_2e/capita, both during unmitigated and unmitigated scenarios. the proposed project would not hinder the State's ability to reach the GHG reduction target nor conflict with any applicable plan, policy, or regulation related to GHG reduction, and impacts related to GHG emissions and global climate change would be considered ***less than significant***.

MITIGATION MEASURES

None Required

Impact 3.2: Project implementation may result in the inefficient, wasteful, or unnecessary use of energy resources. (less than significant)

Appendix F of the State CEQA Guidelines requires consideration of the potentially significant energy implications of a project. CEQA requires mitigation measures to reduce "wasteful, inefficient and unnecessary" energy usage (Public Resources Code Section 21100, subdivision [b][3]). According to Appendix F of the CEQA Guidelines, the means to achieve the goal of conserving energy include decreasing overall energy consumption, decreasing reliance on natural gas and oil, and increasing reliance on renewable energy sources. In particular, the proposed project would be considered "wasteful, inefficient, and unnecessary" if it were to violate state and federal energy standards and/or result in significant adverse impacts related to project energy requirements, energy inefficiencies, energy intensiveness of materials, cause significant impacts on local and regional energy supplies or generate requirements for additional capacity, fail to comply with existing energy standards, otherwise result in significant adverse impacts on energy resources, or conflict or create an inconsistency with applicable plan, policy, or regulation.

The proposed project is primarily a residential development, with 195 apartment units, and a 6,716 square foot clubhouse, which will include a leasing office, gym, and pool. The proposed project uses would not have a high or wasteful demand for energy. The amount of energy used at the residential uses within the project site would directly correlate to the number and size of residential units, the energy consumption of associated unit appliances, garage usage, and outdoor lighting, landscape maintenance, and other energy uses associated with project site activities. Other proposed project energy uses include fuel used by vehicle trips generated by the project during its construction and operation, and fuel used by off-road construction vehicles during construction. The following discussion provides calculated levels of energy use expected for the proposed Project, based on commonly used modelling software (i.e. CalEEMod v.2016.3.1 and the California Air Resource Board's EMFAC2014). It should be noted that many of the assumptions provided by CalEEMod are conservative relative to the proposed project. Therefore, this discussion provides conservative estimate of proposed project emissions.

ELECTRICITY AND NATURAL GAS

Electricity and natural gas used by the proposed project would be used for primarily for residential housing end uses. Additionally, the energy required to pump water and wastewater to and within the project site is included under electricity usage. Total annual unmitigated and mitigated electricity (kWh) and natural gas (kBTU) usage associated with the operation of the proposed Project are shown in Tables 3.5 and 3.6, below (as provided by CalEEMod). The proposed project incorporates feasible mitigation to reduce the proposed project's operational electricity and natural gas consumption (see Mitigation Measures 2.1, 2.2, and 2.3).

TABLE 3.5: PROJECT OPERATIONAL NATURAL GAS AND ELECTRICITY USAGE (UNMITIGATED SCENARIO)

EMISSIONS[A]	*NATURAL GAS (KBTU/YEAR)*	*ELECTRICITY (KWH/YEAR)*
Apartments Low Rise	3,172,290	942,133
Total	**3,172,290**	**942,133**

NOTE: [A] NUMBERS PROVIDED HERE MAY NOT ADD UP EXACTLY TO TOTAL DUE TO ROUNDING.

SOURCE: CALEEMOD (V.2016.3.1)

TABLE 3.6: PROJECT OPERATIONAL NATURAL GAS AND ELECTRICITY USAGE (MITIGATED SCENARIO)

EMISSIONS[A]	*NATURAL GAS (KBTU/YEAR)*	*ELECTRICITY (KWH/YEAR)*
Apartments Low Rise	3,172,290	920,850
Total	**3,172,290**	**920,850**

NOTE: [A] NUMBERS PROVIDED HERE MAY NOT ADD UP EXACTLY TO TOTAL DUE TO ROUNDING.

SOURCE: CALEEMOD (V.2016.3.1)

According to CalEEMod's *Appendix A: Calculation Details for CalEEMod*, CalEEMod uses the California Commercial End Use Survey (CEUS) database to develop energy intensity value for non-residential buildings. The energy use from residential land uses is calculated based on the Residential Appliance Saturation Survey (RASS). Similar to CEUS, this is a comprehensive energy use assessment that includes the end use for various climate zones in California.

As shown in Tables 3.5 and 3.6, proposed project operational energy usage would be reduced with implementation of Mitigation Measures 2.1, 2.2, and 2.3. Measures that would increase project energy efficiency include disallowing wood-burning fireplaces/hearths and requiring the installation of energy efficient appliances. As a conservative estimate, the proposed project's electricity requirements would be reduced by approximately 2.3% (electricity) with the incorporation of this mitigation.

ON-ROAD VEHICLES (OPERATION)

The proposed project would generate vehicle trips during its operational phase. According to the Traffic data provided for the proposed Project by Omni-Means, the proposed project would generate approximately 1,305 gross daily vehicle trips. In order to calculate operational on-road vehicle energy usage and emissions, default trip lengths generated by CalEEMod were used, which are based on the proposed project location and urbanization level parameters De Novo (the EIR consultant) selected within CalEEMod (i.e. "Placer-Sacramento County" Air District and "Urban" urbanization level). These values are provided by the individual districts or use a default average

for the state, depending on the location of the proposed Project (ENVIRON, 2013). Based on default factors provided by CalEEMod, the weighted average distance per trip is assumed to be approximately 8.86 miles. Therefore, the proposed project would generate at total of approximately 11,567 average daily vehicle miles travelled (Average Daily VMT). Using fleet mix data provide by CalEEMod (v.2016.3.1), and Year 2019 gasoline and diesel MPG (miles per gallon) factors for individual vehicle classes as provided by EMFAC2014, De Novo derived weighted MPG factors of approximately 25.2 for gasoline and 12.6 for diesel. With this information, De Novo calculated that the unmitigated proposed project would generate vehicle trips that would use a total of approximately 427 gallons of gasoline and 66 gallons of diesel fuel per day, on average, or 155,781 gallons of gasoline and 23,919 annual gallons of diesel fuel per year.

On-road Vehicles (Construction)

The proposed project would also generate on-road vehicle trips during project construction (from construction workers and vendors). Estimates of vehicle fuel consumed were derived based on the assumed construction schedule, vehicle trip lengths and number of workers per construction phase as provided by CalEEMod, and Year 2019 gasoline MPG factors provided by EMFAC2014. For the purposes of simplicity, it was assumed that all on-road worker vehicles generated by the construction phase of the project would use gasoline as a fuel source (as opposed to diesel fuel or alternative sources). Additionally, it was assumed that all on-road vendor trucks generated by the construction phase would use diesel fuel. Table 3.7, below, describes gasoline and diesel fuel used by on-road mobile sources during each phase of the construction schedule. As shown, the vast majority of on-road mobile vehicle fuel used during the construction of the proposed project would occur during the building construction phase. See Appendix D of this study for detailed calculations of on-road mobile fuel generated during the project construction period.

Table 3.7: On-road Mobile Fuel Generated by Project Construction Activities – By Phase

Construction Phase	*# of Days*	*Total Daily Worker Trips[(A)]*	*Total Daily Vendor Trips[(A)]*	*Gallons of Gasoline Fuel[(B)]*	*Gallons of Diesel Fuel[(B)]*
Clear and Grub	10	18	-	77	-
Rough Grading	30	20	-	258	-
Finish Grading	30	20	-	258	-
Paving	20	33	-	284	-
Building Construction	300	140	21	18,048	6,666
Architectural Coating	300	28	-	3,610	-
Total	**690**	**259**	**21**	**22,535**	**6,666**

Note: [(A)] Provided by CalEEMod. [(B)]See Appendix D for Further Detail. Note: Numbers may not exactly add up due to rounding.

Source: CalEEMod (v.2016.3.1); EMFAC2014.

Off-road Vehicles (Construction)

Off-road construction vehicles would use diesel fuel during the construction phase of the proposed Project. A non-exhaustive list of off-road constructive vehicles that could be used during the construction phase of the proposed Project includes: cranes, forklifts, generator sets, tractors,

excavators, and dozers. Based on the total amount of CO_2 emissions expected to be generated by the off-road mobile vehicles during the construction phase of the proposed Project (as provided by the CalEEMod output), and a CO_2 to diesel fuel conversion factor (provided by the U.S. Energy Information Administration), the proposed Project would use a maximum total of approximately 63,007.14 gallons of diesel fuel for off-road construction vehicles. Detailed calculations are provided in Appendix D.

OTHER

Proposed project landscape maintenance activities would generally require the use fossil fuel (i.e. gasoline) energy. For example, lawn mowers require the use of fuel for power. As an approximation, it is estimated that gasoline-powered landscape care maintenance would occur 0.25 hours per week for each residential unit proposed. Given a total of 195 dwelling units, landscape maintenance would occur for 2,535 hours per year. With a conservative estimate of approximately 0.5 gallons of gasoline used per person-hour of landscape maintenance, the proposed project would require the use of approximately 1,267.5 gallons of gasoline per year to power landscape maintenance equipment for residential uses. The energy used to power landscape maintenance equipment would not differ substantially from the energy required for landscape maintenance for similar types of projects.

The proposed project could also use other sources of energy not identified here. Examples of other energy sources include alternative and/or renewable energy (such as solar PV) and/or on-site stationary sources (such as on-site diesel generators) for electricity generation. However, these sources of energy are not currently planned to be utilized by the proposed project.

CONCLUSION

The proposed project would use energy resources for the operation of project buildings (i.e electricity and natural gas), for on-road vehicle trips (i.e. gasoline and diesel fuel) generated by the proposed project, and from off-road vehicles generated by and associated with the proposed project (i.e. diesel fuel). Each of these activities would require the use of energy resources. The proposed project would be responsible for conserving energy, to the extent feasible, and relies heavily on reducing per capita energy consumption to achieve this goal, including through Statewide and local measures.

The proposed project would be in compliance with all applicable Federal, State, and local regulations regulating energy usage. For example, PG&E is responsible for the mix of energy resources used to provide electricity for its customers, and it is in the process of implementing the Statewide Renewable Portfolio Standard (RPS) to increase the proportion of renewable energy (e.g. solar and wind) within its energy portfolio. Based on this requirement, PG&E is expected to procure at least 33% of its electricity resources from renewable energy resources by 2020, and 50% by 2030. Other Statewide measures, including those intended to improve the energy efficiency of the statewide passenger and heavy-duty truck vehicle fleet (e.g. the Pavley Bill and the Low Carbon Fuel Standard), would improve vehicle fuel economies, thereby conserving gasoline and diesel fuel. These energy savings would continue to accrue over time. Furthermore,

as described previously, the incorporation of the mitigation measure described previously in this section would further reduce project energy. The proposed project would also be in compliance with the planning documents described previously within this section.

As a result, the proposed project would not result in any significant adverse impacts related to Project energy requirements, energy use inefficiencies, and/or the energy intensiveness of materials by amount and fuel type for each stage of the Project including construction, operations, maintenance, and/or removal. PG&E, the electricity and natural gas provider to the site, maintains sufficient capacity to serve the proposed project. The proposed project would comply with all existing energy standards, including those established by the City of Rocklin, and would not result in significant adverse impacts on energy resources. Although improvements to City's pedestrian, bicycle, and public transit systems would provide further opportunities for alternative transit, the proposed project would be linked closely with existing networks that, in large part, are sufficient for most residents of the proposed project and the City of Rocklin as a whole. For these reasons, and others (as described previously), the proposed project would not be expected cause an inefficient, wasteful, or unnecessary use of energy resources nor cause a significant impact on any of the threshold as described by Appendix F of the *CEQA Guidelines*. This is a **less than significant** impact.

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C Donald Ahrens. 2006. Meteorology Today: An Introduction to Weather, Climate, & the Environment.

California Air Resources Board. 2005. Air Quality and Land Use Handbook: A Community Health Perspective.

California Air Resources Board. 2015. 2020 Statewide Greenhouse Gas Emissions and the 2020 Target. Available at: https://www.arb.ca.gov/cc/inventory/data/misc/2020_forecast_base0911_2015-01-22.pdf

California Air Pollution Control Officers Association. 2016. CalEEMod (v. 2016.3.1)

California Air Resources Board. 2015. California Ambient Air Quality Standards (CAAQS). Available: http://www.arb.ca.gov/research/aaqs/caaqs/caaqs.htm.

California Air Resources Board. 2016. ARB Databases: Aerometric Data Analysis and Management System (ADAM). Available: <https://www.arb.ca.gov/desig/adm/adm.htm>.

California Air Resources Board. 2017. ARB Databases: Aerometric Data Analysis and Management System (ADAM). Available: <https://www.arb.ca.gov/adam/index.html>.

California Energy Commission. 2012. Energy Almanac. Retrieved August 2012, from http://energyalmanac.ca.gov/overview/index.html

California Energy Commission. 2016. California Greenhouse Gas Emission Inventory – 2016 Edition. Available at: https://www.arb.ca.gov/cc/inventory/data/data.htm

California Environmental Protection Agency, Climate Action Team. 2006. Climate Action Team Report to Governor Schwarzenegger and the Legislature. http://www.climatechange.ca.gov/climate_action_team/reports/

Central Intelligence Agency (CIA). 2009. The World Factbook 2009. https://www.cia.gov/library/publications/download/download-2009/

City of Rocklin. 2012. City of Rocklin General Plan.

City of Rocklin. 2011. City of Rocklin General Plan Update Volume 1 – Draft EIR.

City of Rocklin. 2012. City of Rocklin General Plan Update Final EIR.

ENVIRON. 2013. Appendix A: Calculation Details for CalEEMod. Available at: http://www.aqmd.gov/docs/default-source/caleemod/caleemod-appendixa.pdf?sfvrsn=2

Intergovernmental Panel on Climate Change. 2013. “Climate Change 2013: The Physical Science Basis, Summary for Policymakers.” http://www.climatechange2013.org/images/report/WG1AR5_SPM_FINAL.pdf

Omni-Means. 2017. Sierra Gateway Apartments Transportation Impact Analysis Report. March 2017.

Placer County Air Pollution Control District. 2012. CEQA Air Quality Handbook Assessing and Mitigating Air Quality Impacts for Projects Under CEQA.

Placer County Air Pollution Control District. 2016. Review of Land Use Projects Under CEQA. October, 2016.

Placer County Air Pollution Control District. 2017. Correspondence with Yu-shuo Chang, PCAPCD Senior Planner. Phone conversation at 1pm on 4/12/2017.

State of California, Governor's Office of Planning and Research (OPR). 2003. State of California General Plan Guidelines.

U.S. Environmental Protection Agency. 2015. National Ambient Air Quality Standards (NAAQS). Available at: https://www.epa.gov/criteria-air-pollutants/naaqs-table.

SUMMER EMISSIONS

Sierra Gateway Apartments

Placer-Sacramento County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	195.00	Dwelling Unit	10.20	195,000.00	558

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Sierra Gateway Apartments - Placer-Sacramento County, Summer

Project Characteristics -

Land Use - Gross Acreage = 10.2 acres

Construction Phase - Phases and Phase length: Engineer's estimates

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Trips and VMT -

Architectural Coating - Architectural Coating - PCAPCD Rule 218 Architectural Coatings (effective July 1, 2011) (flat 50, non-flat 100, non-flat high gloss 150). Average of 100 to be
used in model per Angel Green with PCAPCD

Vehicle Trips - Revised per traffic study

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation -

Sierra Gateway Apartments - Placer-Sacramento County, Summer

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstructionPhase	NumDays	20.00	300.00
tblConstructionPhase	PhaseEndDate	4/16/2017	1/13/2018
tblConstructionPhase	PhaseEndDate	4/16/2017	2/24/2018
tblConstructionPhase	PhaseEndDate	4/16/2017	4/7/2018
tblConstructionPhase	PhaseEndDate	4/16/2017	6/1/2019
tblConstructionPhase	PhaseEndDate	4/16/2017	12/23/2019
tblConstructionPhase	PhaseEndDate	4/16/2017	6/28/2019
tblConstructionPhase	PhaseStartDate	4/17/2017	1/1/2018
tblConstructionPhase	PhaseStartDate	4/17/2017	1/14/2018
tblConstructionPhase	PhaseStartDate	4/17/2017	2/25/2018
tblConstructionPhase	PhaseStartDate	4/17/2017	4/8/2018
tblConstructionPhase	PhaseStartDate	4/17/2017	10/30/2018
tblConstructionPhase	PhaseStartDate	4/17/2017	6/2/2019
tblLandUse	LotAcreage	12.19	10.20
tblProjectCharacteristics	OperationalYear	2018	2019
tblVehicleTrips	ST_TR	7.16	6.69
tblVehicleTrips	SU_TR	6.07	6.69
tblVehicleTrips	WD_TR	6.59	6.69

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	12.0013	59.5767	35.8149	0.0638	18.2141	2.6348	20.7920	9.9699	2.4240	12.3416	0.0000	6,418.7734	6,418.7734	1.9492	0.0000	6,467.5019
2019	14.4489	62.7993	40.5571	0.0689	1.5223	3.3470	3.8481	0.4070	3.0895	3.2224	0.0000	6,820.7584	6,820.7584	1.9435	0.0000	6,869.3471
Maximum	**14.4489**	**62.7993**	**40.5571**	**0.0689**	**18.2141**	**3.3470**	**20.7920**	**9.9699**	**3.0895**	**12.3416**	**0.0000**	**6,820.7584**	**6,820.7584**	**1.9492**	**0.0000**	**6,869.3471**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	12.0013	59.5767	35.8149	0.0638	8.2777	2.6348	10.8556	4.5080	2.4240	6.8797	0.0000	6,418.7734	6,418.7734	1.9492	0.0000	6,467.5019
2019	14.4489	62.7993	40.5571	0.0689	1.5223	3.3470	3.8481	0.4070	3.0895	3.2224	0.0000	6,820.7584	6,820.7584	1.9435	0.0000	6,869.3471
Maximum	**14.4489**	**62.7993**	**40.5571**	**0.0689**	**8.2777**	**3.3470**	**10.8556**	**4.5080**	**3.0895**	**6.8797**	**0.0000**	**6,820.7584**	**6,820.7584**	**1.9492**	**0.0000**	**6,869.3471**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**50.35**	**0.00**	**40.33**	**52.63**	**0.00**	**35.09**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	303.7635	6.0152	384.5432	0.6682		51.7384	51.7384		51.7384	51.7384	5,415.4875	2,300.1442	7,715.6317	5.0260	0.4260	7,968.2212
Energy	0.0937	0.8010	0.3408	5.1100e-003		0.0648	0.0648		0.0648	0.0648		1,022.4933	1,022.4933	0.0196	0.0188	1,028.5694
Mobile	5.4914	10.5509	49.8742	0.0991	7.9022	0.1107	8.0128	2.1100	0.1043	2.2144		9,909.1838	9,909.1838	0.6124		9,924.4928
Total	**309.3486**	**17.3671**	**434.7582**	**0.7724**	**7.9022**	**51.9138**	**59.8160**	**2.1100**	**51.9075**	**54.0175**	**5,415.4875**	**13,231.8212**	**18,647.3087**	**5.6580**	**0.4447**	**18,921.2834**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3365	0.1873	16.1674	8.5000e-004		0.0886	0.0886		0.0886	0.0886	0.0000	28.9677	28.9677	0.0284	0.0000	29.6786
Energy	0.0937	0.8010	0.3408	5.1100e-003		0.0648	0.0648		0.0648	0.0648		1,022.4933	1,022.4933	0.0196	0.0188	1,028.5694
Mobile	5.4785	10.5135	49.6591	0.0986	7.8627	0.1101	7.9728	2.0995	0.1038	2.2033		9,861.8862	9,861.8862	0.6097		9,877.1297
Total	**10.9087**	**11.5018**	**66.1674**	**0.1046**	**7.8627**	**0.2635**	**8.1261**	**2.0995**	**0.2572**	**2.3567**	**0.0000**	**10,913.3472**	**10,913.3472**	**0.6578**	**0.0188**	**10,935.3776**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**96.47**	**33.77**	**84.78**	**86.46**	**0.50**	**99.49**	**86.41**	**0.50**	**99.50**	**95.64**	**100.00**	**17.52**	**41.47**	**88.37**	**95.78**	**42.21**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Clear and Grub	Site Preparation	1/1/2018	1/13/2018	5	10	Phase 1
2	Rough Grading	Grading	1/14/2018	2/24/2018	5	30	Phase 2
3	Finish Grading	Grading	2/25/2018	4/7/2018	5	30	Phase 3
4	Building Construction	Building Construction	4/8/2018	6/1/2019	5	300	Phase 5
5	Architectural Coatings	Architectural Coating	10/30/2018	12/23/2019	5	300	Phase 6
6	Paving	Paving	6/2/2019	6/28/2019	5	20	Phase 4

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 394,875; Residential Outdoor: 131,625; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Clear and Grub	Air Compressors	0		78	0.48
Finish Grading	Excavators	2	8.00	158	0.38
Finish Grading	Concrete/Industrial Saws	0		81	0.73
Building Construction	Excavators	0		158	0.38

Rough Grading	Cranes	0		231	0.29
Rough Grading	Forklifts	0		89	0.20
Rough Grading	Generator Sets	0		84	0.74
Architectural Coatings	Pavers	0		130	0.42
Architectural Coatings	Rollers	0		80	0.38
Finish Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Rubber Tired Dozers	0		247	0.40
Rough Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Graders	0		187	0.41
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Architectural Coatings	Paving Equipment	0		132	0.36
Paving	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Paving	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Scrapers	0		367	0.48
Rough Grading	Welders	0		46	0.45
Architectural Coatings	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Rough Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Rough Grading	Graders	1	8.00	187	0.41
Finish Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Rough Grading	Rubber Tired Dozers	1	8.00	247	0.40
Clear and Grub	Rubber Tired Dozers	3	8.00	247	0.40

Rough Grading	Scrapers	2	8.00	367	0.48
Finish Grading	Scrapers	2	8.00	367	0.48
Finish Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Clear and Grub	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
				247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Clear and Grub	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Finish Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	140.00	21.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coatings	1	28.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Clear and Grub - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708		3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**18.0663**	**2.5769**	**20.6432**	**9.9307**	**2.3708**	**12.3014**		**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0842	0.0494	0.6530	1.5800e-003	0.1479	9.7000e-004	0.1488	0.0392	9.0000e-004	0.0401		156.9105	156.9105	4.6500e-003		157.0267
Total	**0.0842**	**0.0494**	**0.6530**	**1.5800e-003**	**0.1479**	**9.7000e-004**	**0.1488**	**0.0392**	**9.0000e-004**	**0.0401**		**156.9105**	**156.9105**	**4.6500e-003**		**157.0267**

3.2 Clear and Grub - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708	0.0000	3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**8.1298**	**2.5769**	**10.7067**	**4.4688**	**2.3708**	**6.8396**	**0.0000**	**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0842	0.0494	0.6530	1.5800e-003	0.1479	9.7000e-004	0.1488	0.0392	9.0000e-004	0.0401		156.9105	156.9105	4.6500e-003		157.0267
Total	**0.0842**	**0.0494**	**0.6530**	**1.5800e-003**	**0.1479**	**9.7000e-004**	**0.1488**	**0.0392**	**9.0000e-004**	**0.0401**		**156.9105**	**156.9105**	**4.6500e-003**		**157.0267**

3.3 Rough Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230		6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**8.6733**	**2.6337**	**11.3071**	**3.5965**	**2.4230**	**6.0195**		**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0935	0.0549	0.7255	1.7500e-003	0.1643	1.0800e-003	0.1654	0.0436	9.9000e-004	0.0446		174.3450	174.3450	5.1700e-003		174.4741
Total	**0.0935**	**0.0549**	**0.7255**	**1.7500e-003**	**0.1643**	**1.0800e-003**	**0.1654**	**0.0436**	**9.9000e-004**	**0.0446**		**174.3450**	**174.3450**	**5.1700e-003**		**174.4741**

3.3 Rough Grading - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230	0.0000	6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**3.9030**	**2.6337**	**6.5367**	**1.6184**	**2.4230**	**4.0415**	**0.0000**	**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0935	0.0549	0.7255	1.7500e-003	0.1643	1.0800e-003	0.1654	0.0436	9.9000e-004	0.0446		174.3450	174.3450	5.1700e-003		174.4741
Total	**0.0935**	**0.0549**	**0.7255**	**1.7500e-003**	**0.1643**	**1.0800e-003**	**0.1654**	**0.0436**	**9.9000e-004**	**0.0446**		**174.3450**	**174.3450**	**5.1700e-003**		**174.4741**

3.4 Finish Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230		6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**8.6733**	**2.6337**	**11.3071**	**3.5965**	**2.4230**	**6.0195**		**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0935	0.0549	0.7255	1.7500e-003	0.1643	1.0800e-003	0.1654	0.0436	9.9000e-004	0.0446		174.3450	174.3450	5.1700e-003		174.4741
Total	**0.0935**	**0.0549**	**0.7255**	**1.7500e-003**	**0.1643**	**1.0800e-003**	**0.1654**	**0.0436**	**9.9000e-004**	**0.0446**		**174.3450**	**174.3450**	**5.1700e-003**		**174.4741**

3.4 Finish Grading - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230	0.0000	6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**3.9030**	**2.6337**	**6.5367**	**1.6184**	**2.4230**	**4.0415**	**0.0000**	**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0935	0.0549	0.7255	1.7500e-003	0.1643	1.0800e-003	0.1654	0.0436	9.9000e-004	0.0446		174.3450	174.3450	5.1700e-003		174.4741
Total	**0.0935**	**0.0549**	**0.7255**	**1.7500e-003**	**0.1643**	**1.0800e-003**	**0.1654**	**0.0436**	**9.9000e-004**	**0.0446**		**174.3450**	**174.3450**	**5.1700e-003**		**174.4741**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6795	23.3900	17.5804	0.0269		1.4999	1.4999		1.4099	1.4099		2,620.9351	2,620.9351	0.6421		2,636.9883
Total	**2.6795**	**23.3900**	**17.5804**	**0.0269**		**1.4999**	**1.4999**		**1.4099**	**1.4099**		**2,620.9351**	**2,620.9351**	**0.6421**		**2,636.9883**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1032	2.8162	0.5739	6.3000e-003	0.1422	0.0200	0.1622	0.0410	0.0191	0.0601		658.6815	658.6815	0.0338		659.5270
Worker	0.6546	0.3841	5.0787	0.0123	1.1501	7.5500e-003	1.1576	0.3051	6.9600e-003	0.3120		1,220.4148	1,220.4148	0.0362		1,221.3187
Total	**0.7578**	**3.2003**	**5.6527**	**0.0186**	**1.2923**	**0.0276**	**1.3199**	**0.3460**	**0.0261**	**0.3721**		**1,879.0963**	**1,879.0963**	**0.0700**		**1,880.8457**

3.5 Building Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6795	23.3900	17.5804	0.0269		1.4999	1.4999		1.4099	1.4099	0.0000	2,620.9351	2,620.9351	0.6421		2,636.9883
Total	**2.6795**	**23.3900**	**17.5804**	**0.0269**		**1.4999**	**1.4999**		**1.4099**	**1.4099**	**0.0000**	**2,620.9351**	**2,620.9351**	**0.6421**		**2,636.9883**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1032	2.8162	0.5739	6.3000e-003	0.1422	0.0200	0.1622	0.0410	0.0191	0.0601		658.6815	658.6815	0.0338		659.5270
Worker	0.6546	0.3841	5.0787	0.0123	1.1501	7.5500e-003	1.1576	0.3051	6.9600e-003	0.3120		1,220.4148	1,220.4148	0.0362		1,221.3187
Total	**0.7578**	**3.2003**	**5.6527**	**0.0186**	**1.2923**	**0.0276**	**1.3199**	**0.3460**	**0.0261**	**0.3721**		**1,879.0963**	**1,879.0963**	**0.0700**		**1,880.8457**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127		2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**		**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0910	2.6596	0.5109	6.2400e-003	0.1422	0.0162	0.1585	0.0410	0.0155	0.0565		653.1448	653.1448	0.0321		653.9466
Worker	0.5935	0.3376	4.5626	0.0119	1.1501	7.4600e-003	1.1575	0.3051	6.8800e-003	0.3119		1,183.9296	1,183.9296	0.0322		1,184.7339
Total	**0.6845**	**2.9972**	**5.0734**	**0.0181**	**1.2923**	**0.0237**	**1.3160**	**0.3460**	**0.0224**	**0.3684**		**1,837.0744**	**1,837.0744**	**0.0642**		**1,838.6804**

3.5 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127	0.0000	2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**	**0.0000**	**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0910	2.6596	0.5109	6.2400e-003	0.1422	0.0162	0.1585	0.0410	0.0155	0.0565		653.1448	653.1448	0.0321		653.9466
Worker	0.5935	0.3376	4.5626	0.0119	1.1501	7.4600e-003	1.1575	0.3051	6.8800e-003	0.3119		1,183.9296	1,183.9296	0.0322		1,184.7339
Total	**0.6845**	**2.9972**	**5.0734**	**0.0181**	**1.2923**	**0.0237**	**1.3160**	**0.3460**	**0.0224**	**0.3684**		**1,837.0744**	**1,837.0744**	**0.0642**		**1,838.6804**

3.6 Architectural Coatings - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.1344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506		281.4485	281.4485	0.0267		282.1171
Total	**8.4331**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**		**281.4485**	**281.4485**	**0.0267**		**282.1171**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1309	0.0768	1.0158	2.4500e-003	0.2300	1.5100e-003	0.2315	0.0610	1.3900e-003	0.0624		244.0830	244.0830	7.2300e-003		244.2638
Total	**0.1309**	**0.0768**	**1.0158**	**2.4500e-003**	**0.2300**	**1.5100e-003**	**0.2315**	**0.0610**	**1.3900e-003**	**0.0624**		**244.0830**	**244.0830**	**7.2300e-003**		**244.2638**

3.6 Architectural Coatings - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.1344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506	0.0000	281.4485	281.4485	0.0267		282.1171
Total	**8.4331**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**	**0.0000**	**281.4485**	**281.4485**	**0.0267**		**282.1171**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1309	0.0768	1.0158	2.4500e-003	0.2300	1.5100e-003	0.2315	0.0610	1.3900e-003	0.0624		244.0830	244.0830	7.2300e-003		244.2638
Total	**0.1309**	**0.0768**	**1.0158**	**2.4500e-003**	**0.2300**	**1.5100e-003**	**0.2315**	**0.0610**	**1.3900e-003**	**0.0624**		**244.0830**	**244.0830**	**7.2300e-003**		**244.2638**

3.6 Architectural Coatings - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.1344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		282.0423
Total	**8.4009**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**		**281.4481**	**281.4481**	**0.0238**		**282.0423**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1187	0.0675	0.9125	2.3800e-003	0.2300	1.4900e-003	0.2315	0.0610	1.3800e-003	0.0624		236.7859	236.7859	6.4300e-003		236.9468
Total	**0.1187**	**0.0675**	**0.9125**	**2.3800e-003**	**0.2300**	**1.4900e-003**	**0.2315**	**0.0610**	**1.3800e-003**	**0.0624**		**236.7859**	**236.7859**	**6.4300e-003**		**236.9468**

3.6 Architectural Coatings - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.1344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		282.0423
Total	**8.4009**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**	**0.0000**	**281.4481**	**281.4481**	**0.0238**		**282.0423**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1187	0.0675	0.9125	2.3800e-003	0.2300	1.4900e-003	0.2315	0.0610	1.3800e-003	0.0624		236.7859	236.7859	6.4300e-003		236.9468
Total	**0.1187**	**0.0675**	**0.9125**	**2.3800e-003**	**0.2300**	**1.4900e-003**	**0.2315**	**0.0610**	**1.3800e-003**	**0.0624**		**236.7859**	**236.7859**	**6.4300e-003**		**236.9468**

3.7 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.7894	60.8168	36.7278	0.0608		3.2149	3.2149		2.9578	2.9578		6,023.4554	6,023.4554	1.9058		6,071.0993
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**5.7894**	**60.8168**	**36.7278**	**0.0608**		**3.2149**	**3.2149**		**2.9578**	**2.9578**		**6,023.4554**	**6,023.4554**	**1.9058**		**6,071.0993**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1399	0.0796	1.0755	2.8000e-003	0.2711	1.7600e-003	0.2729	0.0719	1.6200e-003	0.0735		279.0691	279.0691	7.5800e-003		279.2587
Total	**0.1399**	**0.0796**	**1.0755**	**2.8000e-003**	**0.2711**	**1.7600e-003**	**0.2729**	**0.0719**	**1.6200e-003**	**0.0735**		**279.0691**	**279.0691**	**7.5800e-003**		**279.2587**

3.7 Paving - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.7894	60.8168	36.7278	0.0608		3.2149	3.2149		2.9578	2.9578	0.0000	6,023.4554	6,023.4554	1.9058		6,071.0993
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**5.7894**	**60.8168**	**36.7278**	**0.0608**		**3.2149**	**3.2149**		**2.9578**	**2.9578**	**0.0000**	**6,023.4554**	**6,023.4554**	**1.9058**		**6,071.0993**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1399	0.0796	1.0755	2.8000e-003	0.2711	1.7600e-003	0.2729	0.0719	1.6200e-003	0.0735		279.0691	279.0691	7.5800e-003		279.2587
Total	**0.1399**	**0.0796**	**1.0755**	**2.8000e-003**	**0.2711**	**1.7600e-003**	**0.2729**	**0.0719**	**1.6200e-003**	**0.0735**		**279.0691**	**279.0691**	**7.5800e-003**		**279.2587**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement NEV Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.4785	10.5135	49.6591	0.0986	7.8627	0.1101	7.9728	2.0995	0.1038	2.2033		9,861.8862	9,861.8862	0.6097		9,877.1297
Unmitigated	5.4914	10.5509	49.8742	0.0991	7.9022	0.1107	8.0128	2.1100	0.1043	2.2144		9,909.1838	9,909.1838	0.6124		9,924.4928

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,304.55	1,304.55	1304.55	3,736,939	3,718,254
Total	1,304.55	1,304.55	1,304.55	3,736,939	3,718,254

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.479040	0.045925	0.208422	0.153946	0.033880	0.007044	0.017189	0.011123	0.000927	0.000372	0.034705	0.000747	0.006681

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0937	0.8010	0.3408	5.1100e-003		0.0648	0.0648		0.0648	0.0648		1,022.4933	1,022.4933	0.0196	0.0188	1,028.5694
NaturalGas Unmitigated	0.0937	0.8010	0.3408	5.1100e-003		0.0648	0.0648		0.0648	0.0648		1,022.4933	1,022.4933	0.0196	0.0188	1,028.5694

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	8691.19	0.0937	0.8010	0.3408	5.1100e-003		0.0648	0.0648		0.0648	0.0648		1,022.4933	1,022.4933	0.0196	0.0188	1,028.5694
Total		**0.0937**	**0.8010**	**0.3408**	**5.1100e-003**		**0.0648**	**0.0648**		**0.0648**	**0.0648**		**1,022.4933**	**1,022.4933**	**0.0196**	**0.0188**	**1,028.5694**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	8.69119	0.0937	0.8010	0.3408	5.1100e-003		0.0648	0.0648		0.0648	0.0648		1,022.4933	1,022.4933	0.0196	0.0188	1,028.5694
Total		**0.0937**	**0.8010**	**0.3408**	**5.1100e-003**		**0.0648**	**0.0648**		**0.0648**	**0.0648**		**1,022.4933**	**1,022.4933**	**0.0196**	**0.0188**	**1,028.5694**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.3365	0.1873	16.1674	8.5000e-004		0.0886	0.0886		0.0886	0.0886	0.0000	28.9677	28.9677	0.0284	0.0000	29.6786
Unmitigated	303.7635	6.0152	384.5432	0.6682		51.7384	51.7384		51.7384	51.7384	5,415.4875	2,300.1442	7,715.6317	5.0260	0.4260	7,968.2212

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6686					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.1730					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	298.4270	5.8279	368.3757	0.6674		51.6498	51.6498		51.6498	51.6498	5,415.4875	2,271.1765	7,686.6640	4.9976	0.4260	7,938.5426
Landscaping	0.4949	0.1873	16.1674	8.5000e-004		0.0886	0.0886		0.0886	0.0886		28.9677	28.9677	0.0284		29.6786
Total	**303.7635**	**6.0152**	**384.5432**	**0.6682**		**51.7384**	**51.7384**		**51.7384**	**51.7384**	**5,415.4875**	**2,300.1442**	**7,715.6317**	**5.0260**	**0.4260**	**7,968.2212**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6686					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.1730					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.4949	0.1873	16.1674	8.5000e-004		0.0886	0.0886		0.0886	0.0886		28.9677	28.9677	0.0284		29.6786
Total	**5.3365**	**0.1873**	**16.1674**	**8.5000e-004**		**0.0886**	**0.0886**		**0.0886**	**0.0886**	**0.0000**	**28.9677**	**28.9677**	**0.0284**	**0.0000**	**29.6786**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

WINTER EMISSIONS

Sierra Gateway Apartments

Placer-Sacramento County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	195.00	Dwelling Unit	10.20	195,000.00	558

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Gross Acreage = 10.2 acres

Construction Phase - Phases and Phase length: Engineer's estimates

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Trips and VMT -

Architectural Coating - Architectural Coating - PCAPCD Rule 218 Architectural Coatings (effective July 1, 2011) (flat 50, non-flat 100, non-flat high gloss 150). Average of 100 to be
used in model per Angel Green with PCAPCD

Vehicle Trips - Revised per traffic study

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation -

Sierra Gateway Apartments - Placer-Sacramento County, Winter

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstructionPhase	NumDays	20.00	300.00
tblConstructionPhase	PhaseEndDate	4/16/2017	1/13/2018
tblConstructionPhase	PhaseEndDate	4/16/2017	2/24/2018
tblConstructionPhase	PhaseEndDate	4/16/2017	4/7/2018
tblConstructionPhase	PhaseEndDate	4/16/2017	6/1/2019
tblConstructionPhase	PhaseEndDate	4/16/2017	12/23/2019
tblConstructionPhase	PhaseEndDate	4/16/2017	6/28/2019
tblConstructionPhase	PhaseStartDate	4/17/2017	1/1/2018
tblConstructionPhase	PhaseStartDate	4/17/2017	1/14/2018
tblConstructionPhase	PhaseStartDate	4/17/2017	2/25/2018
tblConstructionPhase	PhaseStartDate	4/17/2017	4/8/2018
tblConstructionPhase	PhaseStartDate	4/17/2017	10/30/2018
tblConstructionPhase	PhaseStartDate	4/17/2017	6/2/2019
tblLandUse	LotAcreage	12.19	10.20
tblProjectCharacteristics	OperationalYear	2018	2019
tblVehicleTrips	ST_TR	7.16	6.69
tblVehicleTrips	SU_TR	6.07	6.69
tblVehicleTrips	WD_TR	6.59	6.69

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	11.9830	59.5907	35.7508	0.0636	18.2141	2.6348	20.7920	9.9699	2.4240	12.3416	0.0000	6,399.6633	6,399.6633	1.9488	0.0000	6,448.3820
2019	14.4405	62.8367	40.3646	0.0684	1.5223	3.3470	3.8481	0.4070	3.0895	3.2224	0.0000	6,764.1760	6,764.1760	1.9424	0.0000	6,812.7357
Maximum	**14.4405**	**62.8367**	**40.3646**	**0.0684**	**18.2141**	**3.3470**	**20.7920**	**9.9699**	**3.0895**	**12.3416**	**0.0000**	**6,764.1760**	**6,764.1760**	**1.9488**	**0.0000**	**6,812.7357**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	11.9830	59.5907	35.7508	0.0636	8.2777	2.6348	10.8556	4.5080	2.4240	6.8797	0.0000	6,399.6633	6,399.6633	1.9488	0.0000	6,448.3820
2019	14.4405	62.8367	40.3646	0.0684	1.5223	3.3470	3.8481	0.4070	3.0895	3.2224	0.0000	6,764.1760	6,764.1760	1.9424	0.0000	6,812.7357
Maximum	**14.4405**	**62.8367**	**40.3646**	**0.0684**	**8.2777**	**3.3470**	**10.8556**	**4.5080**	**3.0895**	**6.8797**	**0.0000**	**6,764.1760**	**6,764.1760**	**1.9488**	**0.0000**	**6,812.7357**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**50.35**	**0.00**	**40.33**	**52.63**	**0.00**	**35.09**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	303.7635	6.0152	384.5432	0.6682		51.7384	51.7384		51.7384	51.7384	5,415.4875	2,300.1442	7,715.6317	5.0260	0.4260	7,968.2212
Energy	0.0937	0.8010	0.3408	5.1100e-003		0.0648	0.0648		0.0648	0.0648		1,022.4933	1,022.4933	0.0196	0.0188	1,028.5694
Mobile	4.6864	11.7168	51.1774	0.0904	7.9022	0.1113	8.0134	2.1100	0.1049	2.2149		9,035.3125	9,035.3125	0.6450		9,051.4374
Total	**308.5437**	**18.5330**	**436.0614**	**0.7638**	**7.9022**	**51.9144**	**59.8166**	**2.1100**	**51.9080**	**54.0181**	**5,415.4875**	**12,357.9499**	**17,773.4374**	**5.6906**	**0.4447**	**18,048.2280**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3365	0.1873	16.1674	8.5000e-004		0.0886	0.0886		0.0886	0.0886	0.0000	28.9677	28.9677	0.0284	0.0000	29.6786
Energy	0.0937	0.8010	0.3408	5.1100e-003		0.0648	0.0648		0.0648	0.0648		1,022.4933	1,022.4933	0.0196	0.0188	1,028.5694
Mobile	4.6726	11.6738	50.9726	0.0900	7.8627	0.1108	7.9734	2.0995	0.1044	2.2039		8,992.2304	8,992.2304	0.6424		9,008.2890
Total	**10.1028**	**12.6620**	**67.4809**	**0.0959**	**7.8627**	**0.2641**	**8.1268**	**2.0995**	**0.2578**	**2.3573**	**0.0000**	**10,043.6913**	**10,043.6913**	**0.6904**	**0.0188**	**10,066.5370**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**96.73**	**31.68**	**84.52**	**87.44**	**0.50**	**99.49**	**86.41**	**0.50**	**99.50**	**95.64**	**100.00**	**18.73**	**43.49**	**87.87**	**95.78**	**44.22**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Clear and Grub	Site Preparation	1/1/2018	1/13/2018	5	10	Phase 1
2	Rough Grading	Grading	1/14/2018	2/24/2018	5	30	Phase 2
3	Finish Grading	Grading	2/25/2018	4/7/2018	5	30	Phase 3
4	Building Construction	Building Construction	4/8/2018	6/1/2019	5	300	Phase 5
5	Architectural Coatings	Architectural Coating	10/30/2018	12/23/2019	5	300	Phase 6
6	Paving	Paving	6/2/2019	6/28/2019	5	20	Phase 4

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 394,875; Residential Outdoor: 131,625; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Clear and Grub	Air Compressors	0		78	0.48
Finish Grading	Excavators	2	8.00	158	0.38
Finish Grading	Concrete/Industrial Saws	0		81	0.73
Building Construction	Excavators	0		158	0.38

Rough Grading	Cranes	0		231	0.29
Rough Grading	Forklifts	0		89	0.20
Rough Grading	Generator Sets	0		84	0.74
Architectural Coatings	Pavers	0		130	0.42
Architectural Coatings	Rollers	0		80	0.38
Finish Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Rubber Tired Dozers	0		247	0.40
Rough Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Graders	0		187	0.41
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Architectural Coatings	Paving Equipment	0		132	0.36
Paving	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Paving	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Scrapers	0		367	0.48
Rough Grading	Welders	0		46	0.45
Architectural Coatings	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Rough Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Rough Grading	Graders	1	8.00	187	0.41
Finish Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Rough Grading	Rubber Tired Dozers	1	8.00	247	0.40
Clear and Grub	Rubber Tired Dozers	3	8.00	247	0.40

Rough Grading	Scrapers	2	8.00	367	0.48
Finish Grading	Scrapers	2	8.00	367	0.48
Finish Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Clear and Grub	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
				247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Clear and Grub	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Finish Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	140.00	21.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coatings	1	28.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Clear and Grub - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708		3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**18.0663**	**2.5769**	**20.6432**	**9.9307**	**2.3708**	**12.3014**		**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0816	0.0620	0.5952	1.4000e-003	0.1479	9.7000e-004	0.1488	0.0392	9.0000e-004	0.0401		139.7114	139.7114	4.3000e-003		139.8188
Total	**0.0816**	**0.0620**	**0.5952**	**1.4000e-003**	**0.1479**	**9.7000e-004**	**0.1488**	**0.0392**	**9.0000e-004**	**0.0401**		**139.7114**	**139.7114**	**4.3000e-003**		**139.8188**

3.2 Clear and Grub - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708	0.0000	3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**8.1298**	**2.5769**	**10.7067**	**4.4688**	**2.3708**	**6.8396**	**0.0000**	**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0816	0.0620	0.5952	1.4000e-003	0.1479	9.7000e-004	0.1488	0.0392	9.0000e-004	0.0401		139.7114	139.7114	4.3000e-003		139.8188
Total	**0.0816**	**0.0620**	**0.5952**	**1.4000e-003**	**0.1479**	**9.7000e-004**	**0.1488**	**0.0392**	**9.0000e-004**	**0.0401**		**139.7114**	**139.7114**	**4.3000e-003**		**139.8188**

3.3 Rough Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230		6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**8.6733**	**2.6337**	**11.3071**	**3.5965**	**2.4230**	**6.0195**		**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6614	1.5600e-003	0.1643	1.0800e-003	0.1654	0.0436	9.9000e-004	0.0446		155.2349	155.2349	4.7700e-003		155.3542
Total	**0.0907**	**0.0689**	**0.6614**	**1.5600e-003**	**0.1643**	**1.0800e-003**	**0.1654**	**0.0436**	**9.9000e-004**	**0.0446**		**155.2349**	**155.2349**	**4.7700e-003**		**155.3542**

3.3 Rough Grading - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230	0.0000	6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**3.9030**	**2.6337**	**6.5367**	**1.6184**	**2.4230**	**4.0415**	**0.0000**	**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6614	1.5600e-003	0.1643	1.0800e-003	0.1654	0.0436	9.9000e-004	0.0446		155.2349	155.2349	4.7700e-003		155.3542
Total	**0.0907**	**0.0689**	**0.6614**	**1.5600e-003**	**0.1643**	**1.0800e-003**	**0.1654**	**0.0436**	**9.9000e-004**	**0.0446**		**155.2349**	**155.2349**	**4.7700e-003**		**155.3542**

3.4 Finish Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230		6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**8.6733**	**2.6337**	**11.3071**	**3.5965**	**2.4230**	**6.0195**		**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6614	1.5600e-003	0.1643	1.0800e-003	0.1654	0.0436	9.9000e-004	0.0446		155.2349	155.2349	4.7700e-003		155.3542
Total	**0.0907**	**0.0689**	**0.6614**	**1.5600e-003**	**0.1643**	**1.0800e-003**	**0.1654**	**0.0436**	**9.9000e-004**	**0.0446**		**155.2349**	**155.2349**	**4.7700e-003**		**155.3542**

3.4 Finish Grading - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230	0.0000	6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**3.9030**	**2.6337**	**6.5367**	**1.6184**	**2.4230**	**4.0415**	**0.0000**	**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6614	1.5600e-003	0.1643	1.0800e-003	0.1654	0.0436	9.9000e-004	0.0446		155.2349	155.2349	4.7700e-003		155.3542
Total	**0.0907**	**0.0689**	**0.6614**	**1.5600e-003**	**0.1643**	**1.0800e-003**	**0.1654**	**0.0436**	**9.9000e-004**	**0.0446**		**155.2349**	**155.2349**	**4.7700e-003**		**155.3542**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6795	23.3900	17.5804	0.0269		1.4999	1.4999		1.4099	1.4099		2,620.9351	2,620.9351	0.6421		2,636.9883
Total	**2.6795**	**23.3900**	**17.5804**	**0.0269**		**1.4999**	**1.4999**		**1.4099**	**1.4099**		**2,620.9351**	**2,620.9351**	**0.6421**		**2,636.9883**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1088	2.8588	0.6887	6.0900e-003	0.1422	0.0204	0.1627	0.0410	0.0196	0.0605		636.9772	636.9772	0.0380		637.9274
Worker	0.6347	0.4820	4.6296	0.0109	1.1501	7.5500e-003	1.1576	0.3051	6.9600e-003	0.3120		1,086.6445	1,086.6445	0.0334		1,087.4797
Total	**0.7435**	**3.3409**	**5.3183**	**0.0170**	**1.2923**	**0.0280**	**1.3203**	**0.3460**	**0.0265**	**0.3725**		**1,723.6217**	**1,723.6217**	**0.0714**		**1,725.4071**

3.5 Building Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6795	23.3900	17.5804	0.0269		1.4999	1.4999		1.4099	1.4099	0.0000	2,620.9351	2,620.9351	0.6421		2,636.9883
Total	**2.6795**	**23.3900**	**17.5804**	**0.0269**		**1.4999**	**1.4999**		**1.4099**	**1.4099**	**0.0000**	**2,620.9351**	**2,620.9351**	**0.6421**		**2,636.9883**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1088	2.8588	0.6887	6.0900e-003	0.1422	0.0204	0.1627	0.0410	0.0196	0.0605		636.9772	636.9772	0.0380		637.9274
Worker	0.6347	0.4820	4.6296	0.0109	1.1501	7.5500e-003	1.1576	0.3051	6.9600e-003	0.3120		1,086.6445	1,086.6445	0.0334		1,087.4797
Total	**0.7435**	**3.3409**	**5.3183**	**0.0170**	**1.2923**	**0.0280**	**1.3203**	**0.3460**	**0.0265**	**0.3725**		**1,723.6217**	**1,723.6217**	**0.0714**		**1,725.4071**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127		2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**		**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0960	2.6946	0.6164	6.0400e-003	0.1422	0.0166	0.1589	0.0410	0.0159	0.0569		631.4484	631.4484	0.0362		632.3521
Worker	0.5743	0.4235	4.1207	0.0106	1.1501	7.4600e-003	1.1575	0.3051	6.8800e-003	0.3119		1,054.0683	1,054.0683	0.0295		1,054.8061
Total	**0.6703**	**3.1182**	**4.7371**	**0.0166**	**1.2923**	**0.0241**	**1.3164**	**0.3460**	**0.0228**	**0.3688**		**1,685.5167**	**1,685.5167**	**0.0657**		**1,687.1582**

3.5 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127	0.0000	2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**	**0.0000**	**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0960	2.6946	0.6164	6.0400e-003	0.1422	0.0166	0.1589	0.0410	0.0159	0.0569		631.4484	631.4484	0.0362		632.3521
Worker	0.5743	0.4235	4.1207	0.0106	1.1501	7.4600e-003	1.1575	0.3051	6.8800e-003	0.3119		1,054.0683	1,054.0683	0.0295		1,054.8061
Total	**0.6703**	**3.1182**	**4.7371**	**0.0166**	**1.2923**	**0.0241**	**1.3164**	**0.3460**	**0.0228**	**0.3688**		**1,685.5167**	**1,685.5167**	**0.0657**		**1,687.1582**

3.6 Architectural Coatings - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.1344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506		281.4485	281.4485	0.0267		282.1171
Total	**8.4331**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**		**281.4485**	**281.4485**	**0.0267**		**282.1171**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1269	0.0964	0.9259	2.1800e-003	0.2300	1.5100e-003	0.2315	0.0610	1.3900e-003	0.0624		217.3289	217.3289	6.6800e-003		217.4959
Total	**0.1269**	**0.0964**	**0.9259**	**2.1800e-003**	**0.2300**	**1.5100e-003**	**0.2315**	**0.0610**	**1.3900e-003**	**0.0624**		**217.3289**	**217.3289**	**6.6800e-003**		**217.4959**

3.6 Architectural Coatings - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.1344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506	0.0000	281.4485	281.4485	0.0267		282.1171
Total	**8.4331**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**	**0.0000**	**281.4485**	**281.4485**	**0.0267**		**282.1171**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1269	0.0964	0.9259	2.1800e-003	0.2300	1.5100e-003	0.2315	0.0610	1.3900e-003	0.0624		217.3289	217.3289	6.6800e-003		217.4959
Total	**0.1269**	**0.0964**	**0.9259**	**2.1800e-003**	**0.2300**	**1.5100e-003**	**0.2315**	**0.0610**	**1.3900e-003**	**0.0624**		**217.3289**	**217.3289**	**6.6800e-003**		**217.4959**

3.6 Architectural Coatings - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.1344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		282.0423
Total	**8.4009**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**		**281.4481**	**281.4481**	**0.0238**		**282.0423**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1149	0.0847	0.8241	2.1200e-003	0.2300	1.4900e-003	0.2315	0.0610	1.3800e-003	0.0624		210.8137	210.8137	5.9000e-003		210.9612
Total	**0.1149**	**0.0847**	**0.8241**	**2.1200e-003**	**0.2300**	**1.4900e-003**	**0.2315**	**0.0610**	**1.3800e-003**	**0.0624**		**210.8137**	**210.8137**	**5.9000e-003**		**210.9612**

3.6 Architectural Coatings - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.1344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		282.0423
Total	**8.4009**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**	**0.0000**	**281.4481**	**281.4481**	**0.0238**		**282.0423**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1149	0.0847	0.8241	2.1200e-003	0.2300	1.4900e-003	0.2315	0.0610	1.3800e-003	0.0624		210.8137	210.8137	5.9000e-003		210.9612
Total	**0.1149**	**0.0847**	**0.8241**	**2.1200e-003**	**0.2300**	**1.4900e-003**	**0.2315**	**0.0610**	**1.3800e-003**	**0.0624**		**210.8137**	**210.8137**	**5.9000e-003**		**210.9612**

3.7 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.7894	60.8168	36.7278	0.0608		3.2149	3.2149		2.9578	2.9578		6,023.4554	6,023.4554	1.9058		6,071.0993
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**5.7894**	**60.8168**	**36.7278**	**0.0608**		**3.2149**	**3.2149**		**2.9578**	**2.9578**		**6,023.4554**	**6,023.4554**	**1.9058**		**6,071.0993**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1354	0.0998	0.9713	2.5000e-003	0.2711	1.7600e-003	0.2729	0.0719	1.6200e-003	0.0735		248.4590	248.4590	6.9600e-003		248.6329
Total	**0.1354**	**0.0998**	**0.9713**	**2.5000e-003**	**0.2711**	**1.7600e-003**	**0.2729**	**0.0719**	**1.6200e-003**	**0.0735**		**248.4590**	**248.4590**	**6.9600e-003**		**248.6329**

3.7 Paving - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.7894	60.8168	36.7278	0.0608		3.2149	3.2149		2.9578	2.9578	0.0000	6,023.4554	6,023.4554	1.9058		6,071.0993
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**5.7894**	**60.8168**	**36.7278**	**0.0608**		**3.2149**	**3.2149**		**2.9578**	**2.9578**	**0.0000**	**6,023.4554**	**6,023.4554**	**1.9058**		**6,071.0993**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1354	0.0998	0.9713	2.5000e-003	0.2711	1.7600e-003	0.2729	0.0719	1.6200e-003	0.0735		248.4590	248.4590	6.9600e-003		248.6329
Total	**0.1354**	**0.0998**	**0.9713**	**2.5000e-003**	**0.2711**	**1.7600e-003**	**0.2729**	**0.0719**	**1.6200e-003**	**0.0735**		**248.4590**	**248.4590**	**6.9600e-003**		**248.6329**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement NEV Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.6726	11.6738	50.9726	0.0900	7.8627	0.1108	7.9734	2.0995	0.1044	2.2039		8,992.2304	8,992.2304	0.6424		9,008.2890
Unmitigated	4.6864	11.7168	51.1774	0.0904	7.9022	0.1113	8.0134	2.1100	0.1049	2.2149		9,035.3125	9,035.3125	0.6450		9,051.4374

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,304.55	1,304.55	1304.55	3,736,939	3,718,254
Total	1,304.55	1,304.55	1,304.55	3,736,939	3,718,254

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.479040	0.045925	0.208422	0.153946	0.033880	0.007044	0.017189	0.011123	0.000927	0.000372	0.034705	0.000747	0.006681

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0937	0.8010	0.3408	5.1100e-003		0.0648	0.0648		0.0648	0.0648		1,022.4933	1,022.4933	0.0196	0.0188	1,028.5694
NaturalGas Unmitigated	0.0937	0.8010	0.3408	5.1100e-003		0.0648	0.0648		0.0648	0.0648		1,022.4933	1,022.4933	0.0196	0.0188	1,028.5694

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	8691.19	0.0937	0.8010	0.3408	5.1100e-003		0.0648	0.0648		0.0648	0.0648		1,022.4933	1,022.4933	0.0196	0.0188	1,028.5694
Total		**0.0937**	**0.8010**	**0.3408**	**5.1100e-003**		**0.0648**	**0.0648**		**0.0648**	**0.0648**		**1,022.4933**	**1,022.4933**	**0.0196**	**0.0188**	**1,028.5694**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	8.69119	0.0937	0.8010	0.3408	5.1100e-003		0.0648	0.0648		0.0648	0.0648		1,022.4933	1,022.4933	0.0196	0.0188	1,028.5694
Total		**0.0937**	**0.8010**	**0.3408**	**5.1100e-003**		**0.0648**	**0.0648**		**0.0648**	**0.0648**		**1,022.4933**	**1,022.4933**	**0.0196**	**0.0188**	**1,028.5694**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.3365	0.1873	16.1674	8.5000e-004		0.0886	0.0886		0.0886	0.0886	0.0000	28.9677	28.9677	0.0284	0.0000	29.6786
Unmitigated	303.7635	6.0152	384.5432	0.6682		51.7384	51.7384		51.7384	51.7384	5,415.4875	2,300.1442	7,715.6317	5.0260	0.4260	7,968.2212

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6686					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.1730					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	298.4270	5.8279	368.3757	0.6674		51.6498	51.6498		51.6498	51.6498	5,415.4875	2,271.1765	7,686.6640	4.9976	0.4260	7,938.5426
Landscaping	0.4949	0.1873	16.1674	8.5000e-004		0.0886	0.0886		0.0886	0.0886		28.9677	28.9677	0.0284		29.6786
Total	**303.7635**	**6.0152**	**384.5432**	**0.6682**		**51.7384**	**51.7384**		**51.7384**	**51.7384**	**5,415.4875**	**2,300.1442**	**7,715.6317**	**5.0260**	**0.4260**	**7,968.2212**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6686					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.1730					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.4949	0.1873	16.1674	8.5000e-004		0.0886	0.0886		0.0886	0.0886		28.9677	28.9677	0.0284		29.6786
Total	**5.3365**	**0.1873**	**16.1674**	**8.5000e-004**		**0.0886**	**0.0886**		**0.0886**	**0.0886**	**0.0000**	**28.9677**	**28.9677**	**0.0284**	**0.0000**	**29.6786**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ANNUAL EMISSIONS

Sierra Gateway Apartments

Placer-Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	195.00	Dwelling Unit	10.20	195,000.00	558

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Gross Acreage = 10.2 acres

Construction Phase - Phases and Phase length: Engineer's estimates

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Trips and VMT -

Architectural Coating - Architectural Coating - PCAPCD Rule 218 Architectural Coatings (effective July 1, 2011) (flat 50, non-flat 100, non-flat high gloss 150). Average of 100 to be
used in model per Angel Green with PCAPCD

Vehicle Trips - Revised per traffic study

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation -

Sierra Gateway Apartments - Placer-Sacramento County, Annual

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstructionPhase	NumDays	20.00	300.00
tblConstructionPhase	PhaseEndDate	4/16/2017	1/13/2018
tblConstructionPhase	PhaseEndDate	4/16/2017	2/24/2018
tblConstructionPhase	PhaseEndDate	4/16/2017	4/7/2018
tblConstructionPhase	PhaseEndDate	4/16/2017	6/1/2019
tblConstructionPhase	PhaseEndDate	4/16/2017	12/23/2019
tblConstructionPhase	PhaseEndDate	4/16/2017	6/28/2019
tblConstructionPhase	PhaseStartDate	4/17/2017	1/1/2018
tblConstructionPhase	PhaseStartDate	4/17/2017	1/14/2018
tblConstructionPhase	PhaseStartDate	4/17/2017	2/25/2018
tblConstructionPhase	PhaseStartDate	4/17/2017	4/8/2018
tblConstructionPhase	PhaseStartDate	4/17/2017	10/30/2018
tblConstructionPhase	PhaseStartDate	4/17/2017	6/2/2019
tblLandUse	LotAcreage	12.19	10.20
tblProjectCharacteristics	OperationalYear	2018	2019
tblVehicleTrips	ST_TR	7.16	6.69
tblVehicleTrips	SU_TR	6.07	6.69
tblVehicleTrips	WD_TR	6.59	6.69

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.6926	4.6253	3.4222	6.4600e-003	0.4790	0.2412	0.7202	0.1920	0.2252	0.4172	0.0000	582.4461	582.4461	0.1208	0.0000	585.4654
2019	1.3064	2.1700	1.9021	3.6800e-003	0.0980	0.1204	0.2184	0.0263	0.1135	0.1398	0.0000	327.9016	327.9016	0.0551	0.0000	329.2801
Maximum	**1.3064**	**4.6253**	**3.4222**	**6.4600e-003**	**0.4790**	**0.2412**	**0.7202**	**0.1920**	**0.2252**	**0.4172**	**0.0000**	**582.4461**	**582.4461**	**0.1208**	**0.0000**	**585.4654**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.6926	4.6253	3.4222	6.4600e-003	0.2862	0.2412	0.5274	0.1054	0.2252	0.3306	0.0000	582.4456	582.4456	0.1208	0.0000	585.4649
2019	1.3064	2.1700	1.9021	3.6800e-003	0.0980	0.1204	0.2184	0.0263	0.1135	0.1398	0.0000	327.9013	327.9013	0.0551	0.0000	329.2798
Maximum	**1.3064**	**4.6253**	**3.4222**	**6.4600e-003**	**0.2862**	**0.2412**	**0.5274**	**0.1054**	**0.2252**	**0.3306**	**0.0000**	**582.4456**	**582.4456**	**0.1208**	**0.0000**	**585.4649**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**33.41**	**0.00**	**20.54**	**39.69**	**0.00**	**15.56**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
3	10-17-2017	1-16-2018	0.0694	0.0694
4	1-17-2018	4-16-2018	1.9702	1.9702
5	4-17-2018	7-16-2018	0.9759	0.9759
6	7-17-2018	10-16-2018	0.9873	0.9873
7	10-17-2018	1-16-2019	1.2736	1.2736
8	1-17-2019	4-16-2019	1.2099	1.2099
9	4-17-2019	7-16-2019	1.4287	1.4287
10	7-17-2019	9-30-2019	0.2829	0.2829
		Highest	1.9702	1.9702

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	13.1636	0.2558	16.5585	0.0274		2.1256	2.1256		2.1256	2.1256	201.4268	86.8406	288.2673	0.1882	0.0158	297.6939
Energy	0.0171	0.1462	0.0622	9.3000e-004		0.0118	0.0118		0.0118	0.0118	0.0000	443.3625	443.3625	0.0156	5.6700e-003	445.4423
Mobile	0.8597	2.0543	8.7899	0.0168	1.3756	0.0202	1.3958	0.3687	0.0190	0.3877	0.0000	1,521.3285	1,521.3285	0.1023	0.0000	1,523.8863
Waste						0.0000	0.0000		0.0000	0.0000	18.2083	0.0000	18.2083	1.0761	0.0000	45.1103
Water						0.0000	0.0000		0.0000	0.0000	4.0307	28.1547	32.1854	0.4153	0.0100	45.5586
Total	**14.0404**	**2.4563**	**25.4105**	**0.0451**	**1.3756**	**2.1576**	**3.5332**	**0.3687**	**2.1564**	**2.5251**	**223.6658**	**2,079.6862**	**2,303.3520**	**1.7975**	**0.0316**	**2,357.6913**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9281	0.0169	1.4551	8.0000e-005		7.9700e-003	7.9700e-003		7.9700e-003	7.9700e-003	0.0000	2.3651	2.3651	2.3200e-003	0.0000	2.4232
Energy	0.0171	0.1462	0.0622	9.3000e-004		0.0118	0.0118		0.0118	0.0118	0.0000	437.1712	437.1712	0.0154	5.6100e-003	439.2268
Mobile	0.8573	2.0469	8.7537	0.0167	1.3687	0.0201	1.3888	0.3668	0.0189	0.3857	0.0000	1,514.0820	1,514.0820	0.1019	0.0000	1,516.6290
Waste						0.0000	0.0000		0.0000	0.0000	18.2083	0.0000	18.2083	1.0761	0.0000	45.1103
Water						0.0000	0.0000		0.0000	0.0000	4.0307	28.1547	32.1854	0.4153	0.0100	45.5586
Total	**1.8025**	**2.2099**	**10.2710**	**0.0177**	**1.3687**	**0.0399**	**1.4086**	**0.3668**	**0.0387**	**0.4055**	**22.2390**	**1,981.7730**	**2,004.0120**	**1.6109**	**0.0157**	**2,048.9479**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**87.16**	**10.03**	**59.58**	**60.79**	**0.50**	**98.15**	**60.13**	**0.50**	**98.20**	**83.94**	**90.06**	**4.71**	**13.00**	**10.38**	**50.40**	**13.10**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Clear and Grub	Site Preparation	1/1/2018	1/13/2018	5	10	Phase 1
2	Rough Grading	Grading	1/14/2018	2/24/2018	5	30	Phase 2
3	Finish Grading	Grading	2/25/2018	4/7/2018	5	30	Phase 3
4	Building Construction	Building Construction	4/8/2018	6/1/2019	5	300	Phase 5
5	Architectural Coatings	Architectural Coating	10/30/2018	12/23/2019	5	300	Phase 6
6	Paving	Paving	6/2/2019	6/28/2019	5	20	Phase 4

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 394,875; Residential Outdoor: 131,625; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Clear and Grub	Air Compressors	0		78	0.48
Finish Grading	Excavators	2	8.00	158	0.38
Finish Grading	Concrete/Industrial Saws	0		81	0.73
Building Construction	Excavators	0		158	0.38
Rough Grading	Cranes	0		231	0.29
Rough Grading	Forklifts	0		89	0.20
Rough Grading	Generator Sets	0		84	0.74
Architectural Coatings	Pavers	0		130	0.42
Architectural Coatings	Rollers	0		80	0.38
Finish Grading	Rubber Tired Dozers	1	8.00	247	0.40

Building Construction	Rubber Tired Dozers	0		247	0.40
Rough Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Graders	0		187	0.41
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Architectural Coatings	Paving Equipment	0		132	0.36
Paving	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Paving	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Scrapers	0		367	0.48
Rough Grading	Welders	0		46	0.45
Architectural Coatings	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Rough Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Rough Grading	Graders	1	8.00	187	0.41
Finish Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Rough Grading	Rubber Tired Dozers	1	8.00	247	0.40
Clear and Grub	Rubber Tired Dozers	3	8.00	247	0.40
Rough Grading	Scrapers	2	8.00	367	0.48
Finish Grading	Scrapers	2	8.00	367	0.48
Finish Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Clear and Grub	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
				247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Clear and Grub	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Finish Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	140.00	21.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coatings	1	28.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	13	33.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Clear and Grub - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3800	17.3800	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0903**	**0.0129**	**0.1032**	**0.0497**	**0.0119**	**0.0615**	**0.0000**	**17.3800**	**17.3800**	**5.4100e-003**	**0.0000**	**17.5152**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	2.8000e-004	2.9200e-003	1.0000e-005	7.1000e-004	0.0000	7.1000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6496	0.6496	2.0000e-005	0.0000	0.6501
Total	**3.8000e-004**	**2.8000e-004**	**2.9200e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.1000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6496**	**0.6496**	**2.0000e-005**	**0.0000**	**0.6501**

3.2 Clear and Grub - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3799	17.3799	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0407**	**0.0129**	**0.0535**	**0.0223**	**0.0119**	**0.0342**	**0.0000**	**17.3799**	**17.3799**	**5.4100e-003**	**0.0000**	**17.5152**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	2.8000e-004	2.9200e-003	1.0000e-005	7.1000e-004	0.0000	7.1000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6496	0.6496	2.0000e-005	0.0000	0.6501
Total	**3.8000e-004**	**2.8000e-004**	**2.9200e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.1000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6496**	**0.6496**	**2.0000e-005**	**0.0000**	**0.6501**

3.3 Rough Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9728	84.9728	0.0265	0.0000	85.6341
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.1301**	**0.0395**	**0.1696**	**0.0540**	**0.0364**	**0.0903**	**0.0000**	**84.9728**	**84.9728**	**0.0265**	**0.0000**	**85.6341**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2500e-003	9.4000e-004	9.7300e-003	2.0000e-005	2.3600e-003	2.0000e-005	2.3700e-003	6.3000e-004	1.0000e-005	6.4000e-004	0.0000	2.1654	2.1654	6.0000e-005	0.0000	2.1670
Total	**1.2500e-003**	**9.4000e-004**	**9.7300e-003**	**2.0000e-005**	**2.3600e-003**	**2.0000e-005**	**2.3700e-003**	**6.3000e-004**	**1.0000e-005**	**6.4000e-004**	**0.0000**	**2.1654**	**2.1654**	**6.0000e-005**	**0.0000**	**2.1670**

3.3 Rough Grading - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0586	0.0000	0.0586	0.0243	0.0000	0.0243	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9727	84.9727	0.0265	0.0000	85.6340
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.0586**	**0.0395**	**0.0981**	**0.0243**	**0.0364**	**0.0606**	**0.0000**	**84.9727**	**84.9727**	**0.0265**	**0.0000**	**85.6340**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2500e-003	9.4000e-004	9.7300e-003	2.0000e-005	2.3600e-003	2.0000e-005	2.3700e-003	6.3000e-004	1.0000e-005	6.4000e-004	0.0000	2.1654	2.1654	6.0000e-005	0.0000	2.1670
Total	**1.2500e-003**	**9.4000e-004**	**9.7300e-003**	**2.0000e-005**	**2.3600e-003**	**2.0000e-005**	**2.3700e-003**	**6.3000e-004**	**1.0000e-005**	**6.4000e-004**	**0.0000**	**2.1654**	**2.1654**	**6.0000e-005**	**0.0000**	**2.1670**

3.4 Finish Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9728	84.9728	0.0265	0.0000	85.6341
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.1301**	**0.0395**	**0.1696**	**0.0540**	**0.0364**	**0.0903**	**0.0000**	**84.9728**	**84.9728**	**0.0265**	**0.0000**	**85.6341**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2500e-003	9.4000e-004	9.7300e-003	2.0000e-005	2.3600e-003	2.0000e-005	2.3700e-003	6.3000e-004	1.0000e-005	6.4000e-004	0.0000	2.1654	2.1654	6.0000e-005	0.0000	2.1670
Total	**1.2500e-003**	**9.4000e-004**	**9.7300e-003**	**2.0000e-005**	**2.3600e-003**	**2.0000e-005**	**2.3700e-003**	**6.3000e-004**	**1.0000e-005**	**6.4000e-004**	**0.0000**	**2.1654**	**2.1654**	**6.0000e-005**	**0.0000**	**2.1670**

3.4 Finish Grading - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0586	0.0000	0.0586	0.0243	0.0000	0.0243	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9727	84.9727	0.0265	0.0000	85.6340
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.0586**	**0.0395**	**0.0981**	**0.0243**	**0.0364**	**0.0606**	**0.0000**	**84.9727**	**84.9727**	**0.0265**	**0.0000**	**85.6340**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2500e-003	9.4000e-004	9.7300e-003	2.0000e-005	2.3600e-003	2.0000e-005	2.3700e-003	6.3000e-004	1.0000e-005	6.4000e-004	0.0000	2.1654	2.1654	6.0000e-005	0.0000	2.1670
Total	**1.2500e-003**	**9.4000e-004**	**9.7300e-003**	**2.0000e-005**	**2.3600e-003**	**2.0000e-005**	**2.3700e-003**	**6.3000e-004**	**1.0000e-005**	**6.4000e-004**	**0.0000**	**2.1654**	**2.1654**	**6.0000e-005**	**0.0000**	**2.1670**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2559	2.2338	1.6789	2.5700e-003		0.1432	0.1432		0.1347	0.1347	0.0000	227.0677	227.0677	0.0556	0.0000	228.4585
Total	**0.2559**	**2.2338**	**1.6789**	**2.5700e-003**		**0.1432**	**0.1432**		**0.1347**	**0.1347**	**0.0000**	**227.0677**	**227.0677**	**0.0556**	**0.0000**	**228.4585**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0101	0.2740	0.0600	5.9000e-004	0.0131	1.9300e-003	0.0150	3.7900e-003	1.8400e-003	5.6300e-003	0.0000	56.2756	56.2756	3.1000e-003	0.0000	56.3530
Worker	0.0559	0.0417	0.4337	1.0700e-003	0.1050	7.2000e-004	0.1057	0.0279	6.6000e-004	0.0286	0.0000	96.5047	96.5047	2.8900e-003	0.0000	96.5771
Total	**0.0660**	**0.3157**	**0.4937**	**1.6600e-003**	**0.1181**	**2.6500e-003**	**0.1207**	**0.0317**	**2.5000e-003**	**0.0342**	**0.0000**	**152.7804**	**152.7804**	**5.9900e-003**	**0.0000**	**152.9301**

3.5 Building Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2559	2.2337	1.6789	2.5700e-003		0.1432	0.1432		0.1347	0.1347	0.0000	227.0674	227.0674	0.0556	0.0000	228.4582
Total	**0.2559**	**2.2337**	**1.6789**	**2.5700e-003**		**0.1432**	**0.1432**		**0.1347**	**0.1347**	**0.0000**	**227.0674**	**227.0674**	**0.0556**	**0.0000**	**228.4582**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0101	0.2740	0.0600	5.9000e-004	0.0131	1.9300e-003	0.0150	3.7900e-003	1.8400e-003	5.6300e-003	0.0000	56.2756	56.2756	3.1000e-003	0.0000	56.3530
Worker	0.0559	0.0417	0.4337	1.0700e-003	0.1050	7.2000e-004	0.1057	0.0279	6.6000e-004	0.0286	0.0000	96.5047	96.5047	2.8900e-003	0.0000	96.5771
Total	**0.0660**	**0.3157**	**0.4937**	**1.6600e-003**	**0.1181**	**2.6500e-003**	**0.1207**	**0.0317**	**2.5000e-003**	**0.0342**	**0.0000**	**152.7804**	**152.7804**	**5.9900e-003**	**0.0000**	**152.9301**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1287	1.1488	0.9354	1.4700e-003		0.0703	0.0703		0.0661	0.0661	0.0000	128.1318	128.1318	0.0312	0.0000	128.9121
Total	**0.1287**	**1.1488**	**0.9354**	**1.4700e-003**		**0.0703**	**0.0703**		**0.0661**	**0.0661**	**0.0000**	**128.1318**	**128.1318**	**0.0312**	**0.0000**	**128.9121**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0700e-003	0.1475	0.0305	3.4000e-004	7.4700e-003	8.9000e-004	8.3700e-003	2.1600e-003	8.5000e-004	3.0200e-003	0.0000	31.8418	31.8418	1.6800e-003	0.0000	31.8838
Worker	0.0289	0.0209	0.2211	5.9000e-004	0.0599	4.1000e-004	0.0603	0.0160	3.7000e-004	0.0163	0.0000	53.4233	53.4233	1.4600e-003	0.0000	53.4599
Total	**0.0339**	**0.1683**	**0.2517**	**9.3000e-004**	**0.0674**	**1.3000e-003**	**0.0687**	**0.0181**	**1.2200e-003**	**0.0193**	**0.0000**	**85.2651**	**85.2651**	**3.1400e-003**	**0.0000**	**85.3436**

3.5 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1287	1.1488	0.9354	1.4700e-003		0.0703	0.0703		0.0661	0.0661	0.0000	128.1316	128.1316	0.0312	0.0000	128.9120
Total	**0.1287**	**1.1488**	**0.9354**	**1.4700e-003**		**0.0703**	**0.0703**		**0.0661**	**0.0661**	**0.0000**	**128.1316**	**128.1316**	**0.0312**	**0.0000**	**128.9120**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0700e-003	0.1475	0.0305	3.4000e-004	7.4700e-003	8.9000e-004	8.3700e-003	2.1600e-003	8.5000e-004	3.0200e-003	0.0000	31.8418	31.8418	1.6800e-003	0.0000	31.8838
Worker	0.0289	0.0209	0.2211	5.9000e-004	0.0599	4.1000e-004	0.0603	0.0160	3.7000e-004	0.0163	0.0000	53.4233	53.4233	1.4600e-003	0.0000	53.4599
Total	**0.0339**	**0.1683**	**0.2517**	**9.3000e-004**	**0.0674**	**1.3000e-003**	**0.0687**	**0.0181**	**1.2200e-003**	**0.0193**	**0.0000**	**85.2651**	**85.2651**	**3.1400e-003**	**0.0000**	**85.3436**

3.6 Architectural Coatings - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1830					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7200e-003	0.0451	0.0417	7.0000e-005		3.3900e-003	3.3900e-003		3.3900e-003	3.3900e-003	0.0000	5.7448	5.7448	5.5000e-004	0.0000	5.7585
Total	**0.1897**	**0.0451**	**0.0417**	**7.0000e-005**		**3.3900e-003**	**3.3900e-003**		**3.3900e-003**	**3.3900e-003**	**0.0000**	**5.7448**	**5.7448**	**5.5000e-004**	**0.0000**	**5.7585**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6300e-003	1.9600e-003	0.0204	5.0000e-005	4.9500e-003	3.0000e-005	4.9800e-003	1.3200e-003	3.0000e-005	1.3500e-003	0.0000	4.5473	4.5473	1.4000e-004	0.0000	4.5508
Total	**2.6300e-003**	**1.9600e-003**	**0.0204**	**5.0000e-005**	**4.9500e-003**	**3.0000e-005**	**4.9800e-003**	**1.3200e-003**	**3.0000e-005**	**1.3500e-003**	**0.0000**	**4.5473**	**4.5473**	**1.4000e-004**	**0.0000**	**4.5508**

3.6 Architectural Coatings - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1830					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7200e-003	0.0451	0.0417	7.0000e-005		3.3900e-003	3.3900e-003		3.3900e-003	3.3900e-003	0.0000	5.7448	5.7448	5.5000e-004	0.0000	5.7585
Total	**0.1897**	**0.0451**	**0.0417**	**7.0000e-005**		**3.3900e-003**	**3.3900e-003**		**3.3900e-003**	**3.3900e-003**	**0.0000**	**5.7448**	**5.7448**	**5.5000e-004**	**0.0000**	**5.7585**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6300e-003	1.9600e-003	0.0204	5.0000e-005	4.9500e-003	3.0000e-005	4.9800e-003	1.3200e-003	3.0000e-005	1.3500e-003	0.0000	4.5473	4.5473	1.4000e-004	0.0000	4.5508
Total	**2.6300e-003**	**1.9600e-003**	**0.0204**	**5.0000e-005**	**4.9500e-003**	**3.0000e-005**	**4.9800e-003**	**1.3200e-003**	**3.0000e-005**	**1.3500e-003**	**0.0000**	**4.5473**	**4.5473**	**1.4000e-004**	**0.0000**	**4.5508**

3.6 Architectural Coatings - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0371					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0340	0.2340	0.2348	3.8000e-004		0.0164	0.0164		0.0164	0.0164	0.0000	32.5540	32.5540	2.7500e-003	0.0000	32.6227
Total	**1.0711**	**0.2340**	**0.2348**	**3.8000e-004**		**0.0164**	**0.0164**		**0.0164**	**0.0164**	**0.0000**	**32.5540**	**32.5540**	**2.7500e-003**	**0.0000**	**32.6227**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0135	9.7800e-003	0.1035	2.8000e-004	0.0280	1.9000e-004	0.0282	7.4600e-003	1.8000e-004	7.6400e-003	0.0000	24.9962	24.9962	6.8000e-004	0.0000	25.0133
Total	**0.0135**	**9.7800e-003**	**0.1035**	**2.8000e-004**	**0.0280**	**1.9000e-004**	**0.0282**	**7.4600e-003**	**1.8000e-004**	**7.6400e-003**	**0.0000**	**24.9962**	**24.9962**	**6.8000e-004**	**0.0000**	**25.0133**

3.6 Architectural Coatings - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0371					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0340	0.2340	0.2348	3.8000e-004		0.0164	0.0164		0.0164	0.0164	0.0000	32.5540	32.5540	2.7500e-003	0.0000	32.6227
Total	**1.0711**	**0.2340**	**0.2348**	**3.8000e-004**		**0.0164**	**0.0164**		**0.0164**	**0.0164**	**0.0000**	**32.5540**	**32.5540**	**2.7500e-003**	**0.0000**	**32.6227**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0135	9.7800e-003	0.1035	2.8000e-004	0.0280	1.9000e-004	0.0282	7.4600e-003	1.8000e-004	7.6400e-003	0.0000	24.9962	24.9962	6.8000e-004	0.0000	25.0133
Total	**0.0135**	**9.7800e-003**	**0.1035**	**2.8000e-004**	**0.0280**	**1.9000e-004**	**0.0282**	**7.4600e-003**	**1.8000e-004**	**7.6400e-003**	**0.0000**	**24.9962**	**24.9962**	**6.8000e-004**	**0.0000**	**25.0133**

3.7 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0579	0.6082	0.3673	6.1000e-004		0.0322	0.0322		0.0296	0.0296	0.0000	54.6439	54.6439	0.0173	0.0000	55.0761
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0579**	**0.6082**	**0.3673**	**6.1000e-004**		**0.0322**	**0.0322**		**0.0296**	**0.0296**	**0.0000**	**54.6439**	**54.6439**	**0.0173**	**0.0000**	**55.0761**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2500e-003	9.0000e-004	9.5600e-003	3.0000e-005	2.5900e-003	2.0000e-005	2.6100e-003	6.9000e-004	2.0000e-005	7.1000e-004	0.0000	2.3106	2.3106	6.0000e-005	0.0000	2.3122
Total	**1.2500e-003**	**9.0000e-004**	**9.5600e-003**	**3.0000e-005**	**2.5900e-003**	**2.0000e-005**	**2.6100e-003**	**6.9000e-004**	**2.0000e-005**	**7.1000e-004**	**0.0000**	**2.3106**	**2.3106**	**6.0000e-005**	**0.0000**	**2.3122**

3.7 Paving - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0579	0.6082	0.3673	6.1000e-004		0.0322	0.0322		0.0296	0.0296	0.0000	54.6438	54.6438	0.0173	0.0000	55.0760
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0579**	**0.6082**	**0.3673**	**6.1000e-004**		**0.0322**	**0.0322**		**0.0296**	**0.0296**	**0.0000**	**54.6438**	**54.6438**	**0.0173**	**0.0000**	**55.0760**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2500e-003	9.0000e-004	9.5600e-003	3.0000e-005	2.5900e-003	2.0000e-005	2.6100e-003	6.9000e-004	2.0000e-005	7.1000e-004	0.0000	2.3106	2.3106	6.0000e-005	0.0000	2.3122
Total	**1.2500e-003**	**9.0000e-004**	**9.5600e-003**	**3.0000e-005**	**2.5900e-003**	**2.0000e-005**	**2.6100e-003**	**6.9000e-004**	**2.0000e-005**	**7.1000e-004**	**0.0000**	**2.3106**	**2.3106**	**6.0000e-005**	**0.0000**	**2.3122**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement NEV Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8573	2.0469	8.7537	0.0167	1.3687	0.0201	1.3888	0.3668	0.0189	0.3857	0.0000	1,514.0820	1,514.0820	0.1019	0.0000	1,516.6290
Unmitigated	0.8597	2.0543	8.7899	0.0168	1.3756	0.0202	1.3958	0.3687	0.0190	0.3877	0.0000	1,521.3285	1,521.3285	0.1023	0.0000	1,523.8863

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,304.55	1,304.55	1304.55	3,736,939	3,718,254
Total	1,304.55	1,304.55	1,304.55	3,736,939	3,718,254

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.479040	0.045925	0.208422	0.153946	0.033880	0.007044	0.017189	0.011123	0.000927	0.000372	0.034705	0.000747	0.006681

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	267.8860	267.8860	0.0121	2.5100e-003	268.9356
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	274.0772	274.0772	0.0124	2.5600e-003	275.1511
NaturalGas Mitigated	0.0171	0.1462	0.0622	9.3000e-004		0.0118	0.0118		0.0118	0.0118	0.0000	169.2852	169.2852	3.2400e-003	3.1000e-003	170.2912
NaturalGas Unmitigated	0.0171	0.1462	0.0622	9.3000e-004		0.0118	0.0118		0.0118	0.0118	0.0000	169.2852	169.2852	3.2400e-003	3.1000e-003	170.2912

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	3.17229e+006	0.0171	0.1462	0.0622	9.3000e-004		0.0118	0.0118		0.0118	0.0118	0.0000	169.2852	169.2852	3.2400e-003	3.1000e-003	170.2912
Total		**0.0171**	**0.1462**	**0.0622**	**9.3000e-004**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**169.2852**	**169.2852**	**3.2400e-003**	**3.1000e-003**	**170.2912**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	3.17229e+006	0.0171	0.1462	0.0622	9.3000e-004		0.0118	0.0118		0.0118	0.0118	0.0000	169.2852	169.2852	3.2400e-003	3.1000e-003	170.2912
Total		**0.0171**	**0.1462**	**0.0622**	**9.3000e-004**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**169.2852**	**169.2852**	**3.2400e-003**	**3.1000e-003**	**170.2912**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	942133	274.0772	0.0124	2.5600e-003	275.1511
Total		**274.0772**	**0.0124**	**2.5600e-003**	**275.1511**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	920850	267.8860	0.0121	2.5100e-003	268.9356
Total		**267.8860**	**0.0121**	**2.5100e-003**	**268.9356**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9281	0.0169	1.4551	8.0000e-005		7.9700e-003	7.9700e-003		7.9700e-003	7.9700e-003	0.0000	2.3651	2.3651	2.3200e-003	0.0000	2.4232
Unmitigated	13.1636	0.2558	16.5585	0.0274		2.1256	2.1256		2.1256	2.1256	201.4268	86.8406	288.2673	0.1882	0.0158	297.6939

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1220					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7616					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	12.2355	0.2390	15.1034	0.0274		2.1176	2.1176		2.1176	2.1176	201.4268	84.4754	285.9022	0.1859	0.0158	295.2707
Landscaping	0.0445	0.0169	1.4551	8.0000e-005		7.9700e-003	7.9700e-003		7.9700e-003	7.9700e-003	0.0000	2.3651	2.3651	2.3200e-003	0.0000	2.4232
Total	**13.1636**	**0.2558**	**16.5585**	**0.0274**		**2.1256**	**2.1256**		**2.1256**	**2.1256**	**201.4268**	**86.8406**	**288.2673**	**0.1882**	**0.0158**	**297.6939**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1220					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7616					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0445	0.0169	1.4551	8.0000e-005		7.9700e-003	7.9700e-003		7.9700e-003	7.9700e-003	0.0000	2.3651	2.3651	2.3200e-003	0.0000	2.4232
Total	**0.9281**	**0.0169**	**1.4551**	**8.0000e-005**		**7.9700e-003**	**7.9700e-003**		**7.9700e-003**	**7.9700e-003**	**0.0000**	**2.3651**	**2.3651**	**2.3200e-003**	**0.0000**	**2.4232**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	32.1854	0.4153	0.0100	45.5586
Unmitigated	32.1854	0.4153	0.0100	45.5586

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	12.705 / 8.0097	32.1854	0.4153	0.0100	45.5586
Total		**32.1854**	**0.4153**	**0.0100**	**45.5586**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	12.705 / 8.0097	32.1854	0.4153	0.0100	45.5586
Total		**32.1854**	**0.4153**	**0.0100**	**45.5586**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	18.2083	1.0761	0.0000	45.1103
Unmitigated	18.2083	1.0761	0.0000	45.1103

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	89.7	18.2083	1.0761	0.0000	45.1103
Total		**18.2083**	**1.0761**	**0.0000**	**45.1103**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	89.7	18.2083	1.0761	0.0000	45.1103
Total		**18.2083**	**1.0761**	**0.0000**	**45.1103**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX F: ENERGY CONSERVATION CALCULATIONS

Off-road Mobile (Construction) Energy Usage

Note: For the sake of simplicity, and as a conservative estimation, it was assumed that all off-roadvehicles use diesel fuel as an energy source.

Given Factor:	**639.61**	**metric tons**	**CO2**	**(provided in CalEEMod Output File)**
Conversion Factor:	2204.62	pounds	per metric ton	
Intermediate Result:	**1,410,100**	**pounds**	**CO2**	
Conversion Factor:	22.38	pounds	CO2 per 1 gallon of diesel fuel	(Source: U.S. EIA, 2016. http://www.eia.gov/tools/faqs/faq.cfm?id=307&t=11)
Final Result:	**63,007.14**	**gallons**	**diesel fuel**	

On-road Mobile (Operational) Energy Usage

Note: For the sake of simplicity, it was assumed that passenger vehicles, light duty trucks, motorcycles, and mobile homes use gasoline, and all medium-duty trucks, heavy-duty trucks, and buses use diesel fuel.

Unmitigated:

Step 1: **Total Net Daily Trips (provided by Omni-Means)**

1,305

Res H-W	*Res H-S*	*Res H-O*
Trip Length (miles) (provided by CalEEMod)		
10.8	7.3	7.5
Trip %		
42.60%	21.00%	36.40%

Average Trip Length (weighted average)

8.8638

Therefore:

Average Daily VMT:

11,567

Step 2: Given:

Fleet Mix (provided by CalEEMod v2016.3.1)

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
47.9%	4.6%	20.8%	15.4%	3.4%	0.7%	1.7%	1.1%	0.1%	0.0%	3.5%	0.1%	0.7%

And:

Gasoline MPG Factors for each Vehicle Class (from EMFAC2014) - Year 2019

LDA	LDT1	LDT2	MDV	MCY	MH
29.15291739	24.639583	21.605115	15.91245671	36.97368798	6.522152196

Diesel MPG Factors for each Vehicle Class (from EMFAC2014) - Year 2019

LHD1	LHD2	MHD	HHD	OBUS	UBUS	SBUS
17.10765221	15.428142	8.2006463	5.597399751	6.440965628	4.527565862	7.1978759

Therefore:

Weighted Average MPG Factors

Gasoline: **25.2** Diesel: **12.6**

Step 3: **Therefore:**

427 **daily gallons of gasoline** **66** **daily gallons of diesel**

or

155,781	**annual gallons of gasoline**	**23,919**	**annual gallons of diesel**

On-road Mobile (Construction) Energy Usage - Clear and Grub

Step 1: **Total Daily Worker Trips (provided by CalEEMod)**

18

Worker Trip Length (miles) (provided by CalEEMod)

10.8

Therefore:

Average Worker Daily VMT:

194

Step 2: Given:

Assumed Fleet Mix for Workers (provided by CalEEMod v2016.3.1)

LDA	LDT1	LDT2
0.3333333	0.3333333	0.3333333

And:

Gasoline MPG Factors for each Vehicle Class (from EMFAC2014) - Year 2019

LDA	LDT1	LDT2
29.152917	24.639583	21.605115

Therefore:

Weighted Average Worker MPG Factor

25.1

Step 3: **Therefore:**

7.7 **Worker daily gallons of gasoline**

Step 4: 10 **# of Days (see CalEEMod)**

Therefore:

Result: **77** **Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Rough Grading

Step 1: **Total Daily Worker Trips (provided by CalEEMod)**

20

Worker Trip Length (miles) (provided by CalEEMod)

10.8

Therefore:

Average Worker Daily VMT:

216

Step 2: Given:

Assumed Fleet Mix for Workers (provided by CalEEMod v2016.3.1)

LDA	LDT1	LDT2
0.3333333	0.3333333	0.3333333

And:

Gasoline MPG Factors for each Vehicle Class (from EMFAC2014) - Year 2019

LDA	LDT1	LDT2
29.152917	24.639583	21.605115

Therefore:

Weighted Average Worker MPG Factor

25.1

Step 3: **Therefore:**

8.6 **Worker daily gallons of gasoline**

Step 4: 30 **# of Days (see CalEEMod)**

Therefore:

Result: **258** **Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Finish Grading

Step 1: **Total Daily Worker Trips (provided by CalEEMod)**

20

Worker Trip Length (miles) (provided by CalEEMod)

10.8

Therefore:

Average Worker Daily VMT:

216

Step 2: Given:

Assumed Fleet Mix for Workers (provided by CalEEMod v2016.3.1)

LDA	LDT1	LDT2
0.3333333	0.3333333	0.3333333

And:

Gasoline MPG Factors for each Vehicle Class (from EMFAC2014) - Year 2019

LDA	LDT1	LDT2
29.152917	24.639583	21.605115

Therefore:

Weighted Average Worker MPG Factor

25.1

Step 3: **Therefore:**

8.6 **Worker daily gallons of gasoline**

Step 4: 30 **# of Days (see CalEEMod)**

Therefore:

Result: **258** **Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Paving

Step 1: **Total Daily Worker Trips (provided by CalEEMod)**

33

Worker Trip Length (miles) (provided by CalEEMod)

10.8

Therefore:

Average Worker Daily VMT:

356

Step 2: Given:

Assumed Fleet Mix for Workers (provided by CalEEMod v2016.3.1)

LDA	LDT1	LDT2
0.3333333	0.3333333	0.3333333

And:

Gasoline MPG Factors for each Vehicle Class (from EMFAC2014) - Year 2019

LDA	LDT1	LDT2
29.152917	24.639583	21.605115

Therefore:

Weighted Average Worker MPG Factor

25.1

Step 3: **Therefore:**

14.2 **Worker daily gallons of gasoline**

Step 4: 20 **# of Days (see CalEEMod)**

Therefore:

Result: **284** **Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Building Construction

Step 1:

Total Daily Worker Trips (provided by CalEEMod)	Total Daily Vendor Trips (provided by CalEEMod)	Total Daily Hauler Trips (provided by CalEEMod)
140	21	0

Worker Trip Length (miles) (provided by CalEEMod)	Vendor Trip Length (miles) (provided by CalEEMod)	Hauling Trip Length (miles) (provided by CalEEMod)
10.8	7.3	0

Therefore:

Average Worker Daily VMT:	Average Vendor Daily VMT:	Average Hauling Daily VMT:
1,512.00	**153**	**-**

Step 2:

Given:

Assumed Fleet Mix for Workers (provided by CalEEMod v2016.3.1)

LDA	LDT1	LDT2
0.33333333	0.333333	0.333333

Assumed Fleet Mix for Vendors (provided by CalEEMod v2016.3.1)

MHD	HHD
0.5	0.5

And:

MPG Factors for each Vehicle Class (from EMFAC2014) - Year 2019

Gasoline:

LDA	LDT1	LDT2
29.1529174	24.63958	21.60512

Diesel:

MHD	HHD
8.2006463	5.5974

Therefore:

Weighted Average Worker (Gasoline) MPG Factor	Weighted Average Vendor (Diesel) MPG Factor	Weighted Average Hauling MPG Factor
25.1	**6.9**	**0.0**

Step 3:

Therefore:		Therefore:		Therefore:
60	**Worker daily gallons of gasoline**	**22**	**Vendor daily gallons of diesel**	**0.0**

Step 4:

300 **# of Days (see CalEEMod)**

Therefore:

		Therefore:	
18,048	**Total gallons of gasoline**	**6,666**	**Total gallons of diesel**

On-road Mobile (Construction) Energy Usage - Architectural Coating

Step 1: **Total Daily Worker Trips (provided by CalEEMod)**

28

Worker Trip Length (miles) (provided by CalEEMod)

10.8

Therefore:

Average Worker Daily VMT:

302

Step 2: Given:

Assumed Fleet Mix for Workers (provided by CalEEMod v2016.3.1)

LDA	LDT1	LDT2
0.3333333	0.3333333	0.3333333

And:

Gasoline MPG Factors for each Vehicle Class (from EMFAC2014) - Year 2019

LDA	LDT1	LDT2
29.152917	24.639583	21.605115

Therefore:

Weighted Average Worker MPG Factor

25.1

Step 3: **Therefore:**

12.0 **Worker daily gallons of gasoline**

Step 4: 300 **# of Days (see CalEEMod)**

Therefore:

Result: **3,610** **Total gallons of gasoline**

EMFAC 2014: YEAR 2019 VEHICLE EMISSIONS OUTPUT

EMFAC2014 (v1.0.7) Emissions Inventory
Region Type: Sub-Area
Region: Placer (SV)
Calendar Year: 2019
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	CalYr	VehClass	MdlYr	Speed	Fuel	Population	VMT	Trips	Fuel_Consumption	**MPG Factor**	**Notes**
Placer (SV)	2019	All Other Buses	Aggregated	Aggregated	DSL	38.21879035	2158.413589	0	0.270232		
Placer (SV)	2019	LDA	Aggregated	Aggregated	GAS	82476.47122	2971806.79	520736.7	101.9386	29.15291739	
Placer (SV)	2019	LDA	Aggregated	Aggregated	DSL	860.8009082	32128.86823	5319.399	0.839979		
Placer (SV)	2019	LDA	Aggregated	Aggregated	ELEC	1430.677237	68728.21499	9266.782	0		
Placer (SV)	2019	LDT1	Aggregated	Aggregated	GAS	8128.637302	280161.1192	49546.98	11.37037	24.63958278	
Placer (SV)	2019	LDT1	Aggregated	Aggregated	DSL	15.62773331	289.3379579	75.20428	0.010245		
Placer (SV)	2019	LDT1	Aggregated	Aggregated	ELEC	5.839745871	183.3207842	35.99419	0		
Placer (SV)	2019	LDT2	Aggregated	Aggregated	GAS	38387.3428	1499269.787	242019.9	69.3942	21.60511532	
Placer (SV)	2019	LDT2	Aggregated	Aggregated	DSL	52.2219062	2446.440768	335.1911	0.081645		
Placer (SV)	2019	LHD1	Aggregated	Aggregated	GAS	2443.78117	71668.26643	36408.7	7.488083		
Placer (SV)	2019	LHD1	Aggregated	Aggregated	DSL	3363.582775	104825.4573	42309.64	6.127402	17.10765221	
Placer (SV)	2019	LHD2	Aggregated	Aggregated	GAS	363.4982465	12851.13207	5415.582	1.478491		
Placer (SV)	2019	LHD2	Aggregated	Aggregated	DSL	883.2153063	31907.66124	11109.74	2.068147	15.42814242	
Placer (SV)	2019	MCY	Aggregated	Aggregated	GAS	6177.498752	35097.95992	12353.76	0.949269	36.97368798	
Placer (SV)	2019	MDV	Aggregated	Aggregated	GAS	27846.50028	914586.7757	172827.7	57.47615	15.91245671	
Placer (SV)	2019	MDV	Aggregated	Aggregated	DSL	355.8878825	15336.78972	2266.279	0.676704		
Placer (SV)	2019	MH	Aggregated	Aggregated	GAS	901.9418638	7108.773398	90.23026	1.089943	6.522152196	
Placer (SV)	2019	MH	Aggregated	Aggregated	DSL	300.9952005	2453.281954	30.09952	0.25941		
Placer (SV)	2019	Motor Coach	Aggregated	Aggregated	DSL	11.11354189	1640.067225	0	0.296389		
Placer (SV)	2019	OBUS	Aggregated	Aggregated	GAS	116.7987094	5341.389057	2336.909	0.829284	6.440965628	
Placer (SV)	2019	PTO	Aggregated	Aggregated	DSL	0	4974.146609	0	1.017451		
Placer (SV)	2019	SBUS	Aggregated	Aggregated	GAS	28.89900483	1128.635358	115.596	0.100397		
Placer (SV)	2019	SBUS	Aggregated	Aggregated	DSL	142.1739202	5425.929889	0	0.753824	7.197875935	
Placer (SV)	2019	T6 Ag	Aggregated	Aggregated	DSL	174.4618894	3080.136007	0	0.391267	8.2006463	
Placer (SV)	2019	T6 CAIRP heavy	Aggregated	Aggregated	DSL	8.220668282	444.1127608	0	0.05329		
Placer (SV)	2019	T6 CAIRP small	Aggregated	Aggregated	DSL	20.94643938	1363.316565	0	0.163848		
Placer (SV)	2019	T6 instate constructio	Aggregated	Aggregated	DSL	28.84395386	2085.774416	0	0.255342		
Placer (SV)	2019	T6 instate constructio	Aggregated	Aggregated	DSL	195.4492366	11324.217	0	1.376437		
Placer (SV)	2019	T6 instate heavy	Aggregated	Aggregated	DSL	816.9121704	49322.87337	0	5.921537		
Placer (SV)	2019	T6 instate small	Aggregated	Aggregated	DSL	2111.308261	138588.1681	0	16.68041		
Placer (SV)	2019	T6 OOS heavy	Aggregated	Aggregated	DSL	4.857534634	254.4599215	0	0.030569		
Placer (SV)	2019	T6 OOS small	Aggregated	Aggregated	DSL	12.00152256	781.1291564	0	0.093879		
Placer (SV)	2019	T6 Public	Aggregated	Aggregated	DSL	282.839318	4812.061305	0	0.600936		
Placer (SV)	2019	T6 utility	Aggregated	Aggregated	DSL	24.68991984	477.7186399	0	0.060283		
Placer (SV)	2019	T6TS	Aggregated	Aggregated	GAS	186.3182996	7835.083957	3727.857	1.244361		
Placer (SV)	2019	T7 Ag	Aggregated	Aggregated	DSL	67.0773773	1133.670985	0	0.213084	5.597399751	MHD
Placer (SV)	2019	T7 CAIRP	Aggregated	Aggregated	DSL	162.2640788	33615.14293	0	5.806667		
Placer (SV)	2019	T7 CAIRP constructior	Aggregated	Aggregated	DSL	6.266487231	1479.632477	0	0.255712		
Placer (SV)	2019	T7 NNOOS	Aggregated	Aggregated	DSL	166.2296427	41682.81906	0	6.725873		
Placer (SV)	2019	T7 NOOS	Aggregated	Aggregated	DSL	65.71141468	13277.97154	0	2.341727		
Placer (SV)	2019	T7 other port	Aggregated	Aggregated	DSL	2.167097716	405.5491887	0	0.068573		
Placer (SV)	2019	T7 POAK	Aggregated	Aggregated	DSL	5.919870166	807.3636483	0	0.140922		
Placer (SV)	2019	T7 Public	Aggregated	Aggregated	DSL	251.5367645	5765.993866	0	1.181141		
Placer (SV)	2019	T7 Single	Aggregated	Aggregated	DSL	242.1760915	25050.79657	0	4.151232		
Placer (SV)	2019	T7 single construction	Aggregated	Aggregated	DSL	41.05868662	3827.614539	0	0.642261		
Placer (SV)	2019	T7 SWCV	Aggregated	Aggregated	DSL	114.7408611	5283.165716	0	2.41419		
Placer (SV)	2019	T7 tractor	Aggregated	Aggregated	DSL	162.0729952	22490.48759	0	3.715366		
Placer (SV)	2019	T7 tractor constructio	Aggregated	Aggregated	DSL	32.20379928	2853.769538	0	0.484016		
Placer (SV)	2019	T7 utility	Aggregated	Aggregated	DSL	5.30532809	121.4265246	0	0.023677		
Placer (SV)	2019	T7IS	Aggregated	Aggregated	GAS	7.578856201	778.94226	151.6378	0.165559		
Placer (SV)	2019	UBUS	Aggregated	Aggregated	GAS	26.96286518	3125.271256	107.8515	0.628225		
Placer (SV)	2019	UBUS	Aggregated	Aggregated	DSL	37.59319931	4357.435474	150.3728	0.962423	4.527565862	HHD