APPENDIX B

Air Quality and Greenhouse Gas Impact Assessment

Stantec

Memo

To:	Karen Massey Burbank Housing Development Corporation	From:	Kaitlyn Heck/Elena Nuno Stantec Consulting Services Inc.
Project/File:	Dry Creek Commons Development Project	Date:	May 26, 2022

Reference: Air Quality and Greenhouse Gas Impact Assessment Update

Stantec Consulting Services Inc. (Stantec) prepared an Air Quality and Greenhouse Gas (GHG) Assessment on February 1, 2022, to support the Mitigated Negative Declaration prepared for the Dry Creek Commons Development Project (Project). The February 1st assessment analyzed the health risk impacts posed to residents at the Citrine Apartment Building, located approximately 360 feet south of the Project site. The analysis concluded that impacts posed to residents from diesel particulate matter (DPM) and other toxic air contaminants (TACs) would be less than significant.

Since preparation of the February 1st assessment, two additional pieces of information were received. First, the City of Healdsburg informed the Project Applicant and Stantec that there are two residences located above Plank Coffee along Dry Creek Road. These residences lie approximately 60 feet to the west of the Project boundary and, as such, should be included in the evaluation of health risks from Project construction. Second, the project size acreage increased slightly because of additional land needed for Project frontage improvements. Lastly, there was a discrepancy regarding the distance to sensitive receptors noted in Section 3.1.8 Sensitive Receptors in the environmental setting and the Impact AIR-3 Expose Sensitive Receptors to Substantial Air Pollutant Concentrations in the Air Impact Assessment that warrants additional clarification in this memorandum.

Nearest Sensitive Receptor

While the Project would involve the use of diesel fueled vehicles and off-road equipment, construction would be minor and temporary. The Project proposes to construct 58 residential units, approximately 76% less units than BAAQMD's construction screening threshold of 240 residential units. Therefore, the project's criteria air pollutant emissions fall far below BAAQMD thresholds. Moreover, while the receptor lies 60 feet from the Project boundary, most of the Project construction will occur on the eastern portion of the site near the North Coast Rail Authority right-of-way. According to the California Air Resources Board, DPM emissions dissipate with distance and therefore, residences would be exposed to lower levels of DPM based on where construction would take place. As such, the impact to existing receptors during Project construction would continue to be less than significant.

Project Acreage

The second piece of additional information is related to the project size acreage. The City of Healdsburg noted that the project acreage evaluated in the assessment was 3.53 acres, however, this did not include the 0.17 acres for the project's frontage improvements (0.17 acres). The total project acreage is 3.70 acres.

Reference: Air Quality and Greenhouse Gas Impact Assessment Update

The revision of the project acreage from 3.53 acres to 3.70 acres would not change the air quality impact analysis. The project would still develop 58 residential units which is substantially less than the Bay Area Air Quality Management District's screening threshold of 240 residential units at which criteria air pollutants should be quantitatively evaluated. BAAQMD's thresholds are substantially less than federal air quality de minimis levels. Greenhouse gas emissions were less than 50 percent of the threshold established for the project; the slight increase in acreage would not change the greenhouse gas impact finding because emissions would not substantially increase, and the project would remain consistent with applicable climate action plans. It can be reasonably concluded that the acreage change would not result in a change to the air quality or greenhouse gas impact findings under CEQA or NEPA.

Report Clarification on Nearest Sensitive Receptor

The Air Impact Assessment noted in Section 3.1.8 Sensitive Receptors that the nearest sensitive receptor was located approximately 360 feet south of the Project Site at the Citrine Apartments at 1260 Grove Street and that single-family residences were located 800 feet east of the Project site. Later, the Impact AIR-3 noted that the distance to the nearest sensitive receptor was 530 feet, this was inconsistent with the previous description in Section 3.1.8 because the reported distance was measured from the Project site buildings to the front of the Citrine Apartments. The distance should have been reported as 360 feet to the northeast corner of the Citrine Apartments. This discrepancy does not change the impact finding of less than significant as the Project still falls below BAAQMD's construction screening thresholds for criteria air pollutants for which, diesel particulate matter in the form of PM10 would be minimal.

Further, as clarified in this memorandum, the nearest sensitive receptors are the residences located above Plank Coffee. As noted previously, while this receptor lies 60 feet from the Project boundary, most of the Project construction will occur on the eastern portion of the site near the North Coast Rail Authority right-of-way and overall construction would generate minimal air pollutants as demonstrated through the Project falling below the BAAQMD's construction screening thresholds. As such, the impact to existing receptors during Project construction would be less than significant.

Respectfully,
Stantec Consulting Services Inc.

Kaitlyn Heck

Kaitlyn Heck
Air Quality Specialist
Phone: (626) 568-6069
Mobile: 626-429-6692
kaitlyn.heck@stantec.com

Elena Nuno
Principal Air Quality Specialist
Direct: (559) 355-0580
Mobile: 626-429-6692
elena.nunok@stantec.com

Air Quality and Greenhouse Gas Impact Assessment

Dry Creek Commons Development Project

February 1, 2022

Prepared for:
Burbank Housing Development Corporation
1425 Corporate Center Parkway
Santa Rosa, CA 95407

Prepared by:

Stantec Consulting Services, Inc.
1340 Treat Boulevard, Suite 300
Walnut Creek, CA 94597

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ABBREVIATIONS

ºF	degrees Fahrenheit
µg/m3	Micrograms Per Cubic Meter
AB	Assembly Bill
ACBMs	Asbestos-Containing Building Materials
ATCMs	Airborne Toxic Control Measures
AQP	Air Quality Plan
BACT	Best Available Control Technology
BAU	Business-As-Usual
Burbank	Burbank Housing Development
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CAP	Climate Action Plan
CARB	California Air Resources Board
CCAA	California Clean Air Act
CEQA	California Environmental Quality Act
CH_4	Methane
City	City of Healdsburg
CO	Carbon Monoxide
CO_2	Carbon Dioxide
DPM	Diesel Particulate Matter
DRRP	Diesel Risk Reduction Plan
EO	Executive Order
EPA	United States Environmental Protection Agency
EV	Electric Vehicle
FCAA	Federal Clean Air Act
GHG	Greenhouse Gases
GWP	Global Warming Potential
HAP	Hazardous Air Pollutants
HFC	Hydrofluorocarbons
MMT	Million Metric Tons
MMTCO2e	Million Metric Tons of Carbon Dioxide Equivalents
MTCO2e	Metric Tons of Carbon Dioxide Equivalents
MU	Mixed-Use Zone
NAAQS	National Ambient Air Quality Standards
NCAB	North Coast Air Basin
NSCAPCD	Northern Sonoma County Air Pollution Control District
NCRA	North Coast Rail Authority
NESHAP	National Emissions Standards for Hazardous Air Pollutants
N_2O	Nitrous Oxide
NF_3	Nitrogen Trifluoride
NOA	Naturally Occurring Asbestos
NO_X	Oxides of Nitrogen
NO_2	Nitrogen Dioxide
O_3	Ozone
Pb	Lead
PFC	Perfluorocarbons
PM	Particulate Matter
$PM_{2.5}$	Fine particulate matter; particulate matter 2.5 microns or smaller

PM_{10}¬	Particulate matter; particulate matter 10 microns or smaller
Project	Dry Creek Commons Project
ppb	parts per billion
ppm	parts per million
ROG	Reactive Organic Gases
RPS	Renewable Portfolio Standard
RTP	Regional Transportation Plan
SB	Senate Bill
SCS	Sustainable Communities Strategy
SF_6	Sulfur Hexafluoride
SMART	Sonoma-Marin Area Rail Transit
Study	Air Quality and Greenhouse Gas Impact Assessment Technical Study
TAC	Toxic Air Contaminants
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds

1.0 EXECUTIVE SUMMARY

The purpose of the Air Quality and Greenhouse Gas Impact Assessment is to evaluate the existing conditions and project impact to air quality and greenhouse gas (GHG) resource areas from the Dry Creek Commons Project (Project). The analysis is based on materials and project plans provided by Burbank Housing Development Corporation (Burbank).

1.1 PROJECT UNDERSTANDING

The Project proposes to construct a 58-unit affordable family rental housing project totaling approximately 61,579 square feet on a 3.53-acre site at 155 Dry Creek Road in Healdsburg, California. The subject property is owned by the City of Healdsburg (City). The existing site is zoned by the City as Mixed-Use (MU) Zoning District.

1.2 SUMMARY OF ANALYSIS

Impact AIR-1: The Project would not conflict with or obstruct implementation of the applicable air quality plan. **Less Than Significant Impact.**

Impact AIR-2: The Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard. **Less Than Significant Impact.**

Impact AIR-3: The Project would not expose sensitive receptors to substantial pollutant concentrations. **Less Than Significant Impact.**

Impact AIR-4: The Project would not result in other emissions (such as those leading to odors) affecting a substantial number of people. **Less Than Significant Impact.**

Impact GHG-1: The Project would not generate direct and indirect greenhouse gas emissions that would result in a significant impact on the environment. **Less Than Significant Impact.**

Impact GHG-2: The Project would not conflict with any applicable plan, policy, or regulation of an agency adopted to reduce the emissions of greenhouse gases. **Less Than Significant Impact.**

2.0 INTRODUCTION

2.1 PURPOSE OF ANALYSIS

The purpose of this Air Quality and Greenhouse Gas Impact Assessment (Study) is to analyze potential air quality and greenhouse gas (GHG) impacts that could occur from the construction and operation of the Dry Creek Commons Development Project. This Study was conducted within the context of the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

2.2 PROJECT DESCRIPTION

The Project proposes to construct a 58-unit affordable family rental housing development totaling approximately 61,579 square feet on a 3.53-acre, City-owned property. The units would range in size from approximately 499 to 946 square feet, and the site would include approximately 4,828 square feet for amenities. All units would be offered to extremely low-, very low-, and low-income households except one manager's unit. The residential buildings would be designed to be all-electric and include solar panels on building rooftops. The site would include 97 surface, off-street parking spaces as well as electric vehicle parking and secure, indoor bicycle parking for residents, plus additional bike parking at the entryway for visitors.

The site is designed to embrace Foss Creek and the wetlands on the western side of the site. The orientation of the buildings would allow for approximately 10,225 square feet of open space focused on the wetlands and creek. This open space area would include a central plaza, communal green space and boardwalks, and play areas. An additional 0.85 acres has been set aside for the creation and preservation of on-site wetlands.

2.2.1 Surrounding Land Uses and Existing Conditions

The Project site (Figure 1) is currently an undeveloped lot along Dry Creek Road. The Project site is surrounded by Dry Creek Road and hotels to the south, a coffee shop and fueling station to the west, commercial space to the north, and a car dealership and market to the east. The Foss Creek Pathway adjacent to Project site was also recently completed. Also adjacent to the eastern boundary of the site is the North Coast Rail Authority (NCRA) right-of-way. The rail corridor is currently inactive but is planned for future passenger rail service operated by Sonoma-Marin Area Rail Transit (SMART). Other transit service is available near the site on Healdsburg Avenue and Grove Street.

Figure 1: Project Site

3.0 AIR QUALITY

3.1 ENVIRONMENTAL SETTING

The Project lies in northern Sonoma County within the North Coast Air Basin (NCAB). The air basin is primarily rural and mountainous and includes the northern portion of Sonoma County and the entirety of Mendocino, Trinity, Humboldt, and Del Norte Counties. This portion of the air basin is under the jurisdiction of Northern Sonoma County Air Pollution Control District (NSCAPCD). NSCAPCD covers the northern and coastal regions of Sonoma County, including Annapolis, Bodega, Bodega Bay, Camp Meeker, Cazadero, Cloverdale, Duncan Mills, Forestville, Geyserville, Gualala, Guerneville, Healdsburg, Jenner, Monte Rio, Rio Nido, and The Sea Ranch.

3.1.1 Climate and Meteorology

Climate and meteorology are important considerations for air quality. Local dispersion and regional transport of air pollutants directly relate to prevailing meteorological factors. Wind directions, wind speeds, and vertical temperature structure (inversions) are the primary determinants of transport and dispersion effects. Average summer temperatures range from 90 degrees Fahrenheit (ºF) and to the mid-50s. Average wintertime temperatures range from 39ºF to the low-60s. Most of the area's annual rainfall occurs during the period of November through March (U.S. Climate Data 2022).

3.1.2 Criteria Air Pollutants

Criteria air pollutants includes ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (measured both in units of smaller than 2.5 microns in diameter [$PM_{2.5}$] and in units of particulate matter smaller than 10 microns in diameter [PM_{10}]), and lead (Pb).

Ozone (O_3). Most ground-level O_3 is formed as a result of complex photochemical reactions in the atmosphere between reactive organic gases (ROGs), nitrogen oxides (NOx) and oxygen. ROGs and NOx are considered precursors to the formation of O_3, a highly reactive gas that can damage lung tissue and affect respiratory function. While O_3 in the lower atmosphere is considered a damaging air pollutant, O_3 in the upper atmosphere is beneficial, as it protects the Earth from harmful ultraviolet radiation. However, atmospheric processes preclude ground-level O_3 from reaching the upper atmosphere (EPA 2021a).

Carbon Monoxide (CO). CO is a colorless, odorless, poisonous gas produced by the incomplete combustion of fossil fuels. Elevated levels of CO can result in harmful health effects, especially for the young and elderly, and can also contribute to global climate change (EPA 2021a).

Nitrogen Dioxide (NO_2). NO_2 is a brownish, highly reactive gas primarily produced by the burning of fossil fuels. NO_2 can also lead to the formation of O_3 in the lower atmosphere. NO_2 can cause respiratory ailments, especially in the young and elderly, and can lead to degradations in the health of aquatic and terrestrial ecosystems (EPA 2021a).

Sulfur Dioxide (SO_2). SO_2 is primarily emitted from the combustion of coal and oil by steel mills, pulp and paper mills, and non-ferrous smelters. High concentrations of SO_2 can aggravate existing respiratory and cardiovascular diseases in asthmatics and others who suffer from emphysema or bronchitis. SO_2 also contributes to acid rain, which in turn can lead to the acidification of lakes and streams (EPA 2021a).

Particulate Matter (PM). Airborne PM is not a single pollutant, but is a mixture of many chemical species. PM is a complex mixture of solids and aerosols composed of small droplets of liquid, dry solid fragments, and solid cores with liquid coatings. Particles vary widely in size, shape, and chemical composition, and may contain inorganic ions, metallic compounds, elemental carbon, organic compounds, and compounds from the earth's crust. Particles are defined by their diameter for air quality regulatory purposes. Those with a diameter of 10 microns or less (PM_{10}) are inhalable into the lungs and can induce adverse health effects. Fine particulate matter is defined as particles that are 2.5 microns or less in diameter ($PM_{2.5}$). Emissions from combustion of gasoline, oil, diesel fuel or wood produce much of the $PM_{2.5}$ pollution found in outdoor air, as well as a significant proportion of PM_{10}. PM_{10} also includes dust from construction sites, landfills, agriculture, wildfires and brush/waste burning, industrial sources, wind-blown dust from open lands, pollen, and fragments of bacteria.

PM may be either directly emitted from sources (primarily particles) or formed in the atmosphere through chemical reactions of gases (secondary particles) such as SO_2, NOx, and certain organic compounds (EPA 2021a).

Lead (Pb). Sources of Pb include pipes, fuel, and paint, although the use of Pb in these materials has declined dramatically. Historically, a main source of Pb was automobile emissions. Pb can be inhaled directly or ingested by consuming Pb-contaminated food, water, or dust. Fetuses and children are most susceptible to Pb poisoning, which can result in heart disease and nervous system damage (EPA 2021b). Through regulations, the United States Environmental Protection Agency (EPA) has gradually reduced the Pb content of gasoline. This program has essentially eliminated violations of the Pb standard in urban areas except those areas with Pb point sources.

For the protection of public health and welfare, the Federal Clean Air Act (FCAA) required EPA to establish National Ambient Air Quality Standards (NAAQS) for various pollutants. These pollutants are referred to as "criteria" pollutants because the EPA publishes criteria documents to justify the choice of standards. These standards define the maximum amount of an air pollutant that can be present in ambient air. An ambient air quality standard is generally specified as a concentration averaged over a specific time, such as 1 hour, 8 hours, 24 hours, or 1 year. The different averaging times and concentrations are meant to protect against different exposure effects. Standards established for the protection of human health are referred to as primary standards; whereas standards established for the prevention of environmental and property damage are called secondary standards. The FCAA allows states to adopt additional or more health-protective standards. The air quality regulatory framework and ambient air quality standards are discussed in greater detail later in this report. Table 1 provides a summary of the California and National Ambient Air Quality Standards.

Table 1: California and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards	
		Concentration	Primary	Secondary
Ozone	1 Hour	0.09 ppm (180 µg/m^3)	—	Same as Primary Standard
	8 Hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)	
Respirable Particulate Matter	24 Hour	50 µg/m^3	150 µg/m3	Same as Primary Standard
	Annual Arithmetic Mean	20 µg/m^3	—	
Fine Particulate Matter	24 Hour	—	35 µg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3	
Carbon Monoxide	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	—
	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	—
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	—	—
Nitrogen Dioxide	1 Hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	—
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary Standard
Sulfur Dioxide	1 Hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	—
	3 Hour	—	—	0.5 ppm (1,300 µg/m^3)
	24 Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (for certain areas)	—
	Annual Arithmetic Mean	—	0.030 ppm (for certain areas)	—
Lead	30-Day Average	1.5 µg/m^3	—	—
	Calendar Quarter	—	1.5 µg/m^3	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 µg/m^3	
Visibility-Reducing Particles	8 Hour	See Footnote 1	No National Standards	
Sulfates	24 Hour	25 µg/m^3		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)		
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m^3)	—	

Notes:
[1] In 1989, the California Air Resources Board (CARB) converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.
Key: µg/m^3 = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; ppm = parts per million
Source: CARB 2016c

3.1.3 Odors

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

The ability to detect odors varies considerably among the population and is subjective overall. Some individuals can smell very 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, while some odors that are offensive to one person may be perfectly acceptable to another (e.g., restaurants). It is important to also 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.

Neither the state nor the federal governments have adopted rules or regulations for the control of odor sources.

3.1.4 Toxic Air Contaminants

Toxic Air Contaminants (TACs) are air pollutants that may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; but due to their high toxicity, they may pose a threat to public health even at very low concentrations. Because there is no threshold level below which adverse health impacts are not expected to occur, TACs differ from criteria pollutants for which acceptable levels of exposure can be determined and for which state and federal governments have set ambient air quality standards. TACs, therefore, are not considered "criteria pollutants" under the FCAA or the California Clean Air Act (CCAA); and they are not subject to National or California ambient air quality standards (NAAQS and CAAQS, respectively). Instead, EPA and CARB regulate Hazardous Air Pollutants (HAPs) and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology (BACT) to limit emissions. In conjunction with Air District rules, these federal and state statutes and regulations establish the regulatory framework for TACs. At the national levels, EPA has established National Emission Standards for HAPs (NESHAPs), in accordance with the requirements of

the FCAA and subsequent amendments. These are technology-based, source-specific regulations that limit allowable emissions of HAPs.

Within California, TACs are regulated primarily through the Tanner Air Toxics Act (Assembly Bill [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. The following provides a summary of the primary TACs of concern within the State of California and related health effects.

Diesel Particulate Matter

Diesel Particulate Matter (DPM) was identified as a TAC by the CARB in August 1998. In California, DPM emissions are generated from mobile and stationary sources. Mobile sources include on-road vehicles (e.g., cars, trucks, buses), off-road vehicles and equipment (e.g., locomotives, tractors, cargo-handling equipment, construction equipment), marine vessels (e.g., recreational watercraft, commercial harbor craft, and ocean-going vessels), and transport refrigeration units. Stationary sources include stationary engines used in emergency-standby generators, prime generators, agricultural irrigation pumps, and portable equipment such as portable generators and pumps (CARB 2019).

CARB has set a series of regulations for diesel engines and rules that have led to a 68% decrease in DPM levels since 1990. These regulations include diesel fuel reformulation programs, promoting cleaner cargo-handling equipment at ports and railyards, truck and bus regulations to upgrade engines to newer model years, and other programs to promote electrification of motors and the reduction of diesel use. In comparison to year 2010 inventory of statewide DPM emissions, CARB estimates that emissions of DPM in 2035 will be reduced by more than 50% (CARB 2022).

DPM is typically composed of carbon particles (i.e., soot, black carbon) and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-Butadiene. Diesel exhaust also contains gaseous pollutants, including volatile organic compounds and NOx. NOx emissions from diesel engines are important because they can undergo chemical reactions in the atmosphere leading to formation of $PM_{2.5}$ and O_3.

In California, diesel exhaust particles have been identified as a carcinogen, accounting for an estimated 70% of the total known cancer risks in California. DPM is estimated to increase statewide cancer risk by 520 cancers per million residents exposed over an estimated 70-year lifetime. Non-cancer health effects associated with exposure to DPM include premature death, exacerbated chronic heart and lung disease (including asthma), and decreased lung function in children. Short-term exposure to diesel exhaust can also have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs; and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks (CARB 2016b).

Individuals most vulnerable to non-cancer health effects of DPM are children whose lungs are still developing and the elderly who often have chronic health problems. The elderly and people with emphysema, asthma, and chronic heart and lung disease are especially sensitive to DPM (CARB 2016b). In addition to its health effects, DPM significantly contributes to haze and reduced visibility.

Asbestos

Asbestos is the name given to a number of naturally occurring fibrous silicate minerals that have been mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. The three most common types of asbestos are chrysotile, amosite, and crocidolite. Chrysotile, also known as white asbestos, is the most common type of asbestos found in buildings. Chrysotile makes up approximately 90 to 95 percent of all asbestos contained in buildings in the United States. Exposure to asbestos is a health threat as it may result in health issues such as lung cancer, mesothelioma (a rare cancer of the thin membranes lining the lungs, chest, and abdominal cavity), and asbestosis (a non-cancerous lung disease that causes scarring of the lungs). Exposure to asbestos can occur during demolition or remodeling of buildings constructed prior to its ban for use in buildings in 1977. Exposure to naturally occurring asbestos can occur during soil disturbing activities in areas with deposits present.

3.1.5 Attainment Status

EPA and CARB designate air basins where ambient air quality standards are exceeded as “nonattainment” areas. If standards are met, the area is designated as an “attainment” area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered “unclassified.” National nonattainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards.

Each standard has a different definition, or “form” of what constitutes attainment, based on specific air quality statistics. For example, the federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring values exceeds the threshold per year. In contrast, the federal annual standard for $PM_{2.5}$ is met if the 3-year average of the annual average $PM_{2.5}$ concentration is less than or equal to the standard.

Air quality in northern Sonoma County is in attainment for all pollutants and falls below the standards set in the NAAQS and the CAAQS.

3.1.6 Ambient Air Quality

Local air quality can be evaluated by reviewing relevant air pollution concentrations near the Project. The nearest air quality monitoring station to the project is the Healdsburg-Municipal Airport Monitoring Station located at 1580 Lytton Springs Road, approximately 2.2 miles northeast of the project site. Table 2 includes a summary of the air quality monitoring data at the Healdsburg-Municipal Monitoring Station for the years 2018 through 2020, which are the most recent data set the CARB has available. The monitoring station only monitors 1-hour and 8-hour O_3.

Table 2: Healdsburg-Municipal Airport Monitoring Station Data

Air Pollutant	Averaging Time	Item	2018	2019	2020
Ozone	1 Hour	Max 1 Hour (ppm)	0.075	0.066	0.044
		Days > State Standard (0.09 ppm)	0	0	0
	8 Hour	Max 8 Hour (ppm)	0.061	0.061	0.040
		Days > State Standard (0.070 ppm)	0	0	0
		Days > National Standard (0.070 ppm)	0	0	0
		Days > National Standard (0.075 ppm)	0	0	0

Source: California Air Resources Board (CARB 2021a)
ppm = parts per million

3.1.7 Local Sources of Air Pollution

The Project's site is in a predominately urban setting with commercial uses immediately adjacent east, west, and south of the site. The main sources of air pollution are mobile sources traveling along the nearby roadways that surround the Project site. Nearby sources of air pollution include emissions from vehicles on U.S. Highway 101, Dry Creek Road, Grove Street, and Healdsburg Avenue.

Future air emissions sources include the SMART passenger rail service project that, once completed, will extend approximately 70 miles between Cloverdale in northern Sonoma County and Larkspur Landing in Marin County. The site lies adjacent to the NCRA right-of-way that is planned for the SMART passenger rail line. The SMART passenger rail runs with clean-diesel engines that meet EPA's Tier 4 emissions standards. Tier 4 engines reduce PM and NOx emissions by 96% and 93%, respectively, as compared to regular diesel engines (SMART 2020). The southern portion of the SMART line from Sonoma County Airport to Larkspur opened in August 2019 (Sonoma County 2021). A new SMART rail station is planned for Healdsburg south of downtown; however, the construction schedule for the station is unknown at the time this study was prepared.

3.1.8 Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiovascular diseases. Examples of sensitive receptors include hospitals, residences, convalescent facilities, and schools.

The Project site is located within 1,000 feet of existing sensitive receptors that could be exposed to diesel emission exhaust during the construction. The nearest sensitive receptors are the residents at the Citrine Apartments at 1260 Grove Street, approximately 360 feet south of the Project site and single-family residences located approximately 800 feet east of the Project site. As a residential project, the Project is not considered a source of TACs during operations because it would not include large stationary sources that generate TACs nor would the vehicles accessing the site include a substantial amount of diesel fueled vehicles, which are sources of TACs. The Project would be considered a sensitive receptor.

3.2 REGULATORY SETTING

Air quality within the project area is regulated by several jurisdictions including the EPA, the California Air Resources Board (CARB), and the NSCAPCD. Each of these jurisdictions develops rules, regulations, and policies to attain the goals or directives imposed upon them through legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent.

3.2.1 Federal

U.S. Environmental Protection Agency

At the federal level, EPA has been charged with implementing national air quality programs. The EPA's air quality mandates are drawn primarily from the FCAA that was signed into law in 1970. Congress substantially amended the FCAA in 1977 and again in 1990.

Federal Clean Air Act

The FCAA required EPA to establish NAAQS, and it also set deadlines for their attainment. Two types of NAAQS have been established: primary standards, which protect public health, and secondary standards, which protect public welfare from non-health-related adverse effects, such as visibility restrictions. NAAQS are summarized in Table 1.

Clean Air Act Conformity

Air Emissions

Section 176(c) of the 1990 CAA Amendments contains the General Conformity Rule (40 CFR 51.850-860 and 40 CFR 93.150-160). The General Conformity Rule requires any federal agency responsible for an action in a nonattainment or maintenance area[1] to determine that the action conforms to the applicable SIP. This means that federally supported or funded activities would not (1) cause or contribute to any new air quality standard violation; (2) increase the frequency or severity of any existing standard violation; or (3) delay the timely attainment of any standard, interim emission reduction, or other milestone. The rule allows for approximately 30 exemptions if they conform to an applicable SIP. Emissions of attainment pollutants are exempt from conformity analyses. Actions would conform to a SIP if their annual direct and indirect emissions remain less than the applicable *de minimis* thresholds. Formal conformity determinations are required for any actions that exceed these thresholds. Table 3 details the *de minimis* thresholds for all criteria pollutants.

[1] Areas that were previously designated as non-attainment areas but have now met the standard (with USEPA approval of a suitable air quality plan) are called "maintenance" areas.

Table 3. Federal *De Minimis* Thresholds

Pollutant	Area Type	Tons per Year
Ozone (NOx)	Maintenance	100
Ozone (VOC or ROG)	Maintenance outside an ozone transport region	100
CO, SO_2, and NO_2	All nonattainment and maintenance	100
PM_{10}	Moderate nonattainment and maintenance	100
$PM_{2.5}$ Direct emissions, SO_2, NO_X (unless determined not to be a significant precursor), VOCs or ammonia (if determined to be significant precursors)	All nonattainment and maintenance	100
Pb	All nonattainment and maintenance	25

Notes:
CO = carbon monoxide
Pb = lead
NO2 = nitrogen dioxide
NOX = nitrogen oxide
PM2.5 = particulate matter smaller than 2.5 microns in diameter
PM10 = particulate matter smaller than 10 microns in diameter
SO2 = sulfur dioxide
VOCs = volatile organic compounds
Bolded thresholds indicate the thresholds applicable to the Proposed Action.
Source: USEPA 2020b

National Emission Standards for Hazardous Air Pollutants

Pursuant to the FCAA of 1970, EPA established the National Emission Standards for Hazardous Air Pollutants (NESHAPs). These are technology-based, source-specific regulations that limit allowable emissions of HAPs. Among these sources include asbestos-containing building materials (ACBMs). NESHAPs include requirements pertaining to the inspection, notification, handling, and disposal of ACBMs associated with the demolition and renovation of structures.

3.2.2 State

California Air Resources Board

CARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the CCAA of 1988. Other CARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control districts and air quality management districts), establishing California Ambient Air Quality Standards (CAAQS) (which are often more stringent than the NAAQS), and setting emissions standards for new motor vehicles. The emission standards established for motor vehicles differ depending on various factors including the model year, type of vehicle, fuel, and engine used. The CAAQS are summarized in Table 1.

California Clean Air Act

The CCAA requires that all air districts in the state endeavor to achieve and maintain CAAQS for O_3, CO, SO_2, and NO_2 by the earliest practical date. The CCAA specifies that districts focus attention on reducing the emissions from transportation and area-wide emission sources, and the act provides districts with authority to regulate indirect sources. Each district plan is required to either (1) achieve a 5% annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each non-attainment pollutant or its precursors; or (2) to provide for implementation of all feasible measures to reduce emissions. Any planning effort for air quality attainment would thus need to consider both state and federal planning requirements.

Assembly Bills 1807 & 2588 - Toxic Air Contaminants

Within California, TACs are regulated primarily through AB 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics Hot Spots Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB designates a substance as a TAC.

Existing sources of TACs that are subject to the Air Toxics Hot Spots Information and Assessment Act are required to: (1) prepare a toxic emissions inventory; (2) prepare a risk assessment if emissions are significant; (3) notify the public of significant risk levels; and (4) prepare and implement risk reduction measures.

Assembly Bill 617

In response to AB 617 (C. Garcia, Chapter 136, Statutes of 2017), CARB established the Community Air Protection Program. The Community Air Protection Program includes community air monitoring and community emissions reduction programs and focuses on reducing exposure in communities most impacted by air pollution. The California Legislature has appropriated funding to support early actions to address localized air pollution through targeted incentive funding to deploy cleaner technologies in these communities, as well as grants to support community participation in the AB 617 process. AB 617 also includes new requirements for accelerated retrofit of pollution controls on industrial sources, increased

penalty fees, and greater transparency and availability of air quality and emissions data, which will help advance air pollution control efforts throughout the state.

Regulatory Attainment Designations

Under the CCAA, 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 does not support either an attainment or nonattainment designation. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The EPA designates areas for O_3, CO, and NO_2 as “does not meet the primary standards,” “cannot be classified,” or “better than national standards.” For 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, CARB terminology of attainment, nonattainment, and unclassified is more frequently used. The EPA uses the same sub-categories for nonattainment status: serious, severe, and extreme. In 1991, EPA assigned new nonattainment designations to areas that had previously been classified as Group I, II, or III for PM_{10} based on the likelihood that they would violate national PM_{10} standards. All other areas are designated “unclassified.”

As discussed previously, the NCAB is in attainment for federal and state criteria air pollutant standards.

3.2.3 Regional

Northern Sonoma County Air Pollution Control District

NSCAPCD is the public agency that regulates stationary sources of air pollution in Northern Sonoma County. NSCAPCD maintains air quality conditions in this portion of the NCAB. NSCAPCD also inspects stationary sources, responds to citizen complaints, monitors ambient air quality and meteor logical conditions, and implements other programs and regulations required by the CAA and the CCAA.

NSCAPCD does not have any CEQA Guidelines for individual development projects to use as guidance and recommends that project’s use thresholds and guidance recommendations from the Bay Area Air Quality Management District (BAAQMD) to inform their analysis. BAAQMD published CEQA guidance in May 2017 that recommends criteria air pollutant and GHG thresholds established in 2010. BAAQMD is currently working to update any outdated information in their guidelines.

Northern Sonoma County Air Pollution Control District Rules and Regulations

The NSCAPCD rules and regulations that may apply to projects that will occur during buildout of the project include but are not limited to the following:

Rule 430 – Fugitive Dust Emissions. The purpose of this rule is to limit the amount of particulate matter than becomes airborne and sets the following applicable provisions:

- Covering open bodied trucks when used for transporting materials likely to give rise to airborne dust.
- Installing and using hoods, fans, and fabric filters to enclose and vent the handling of dusty materials. Containment methods can be employed during sandblasting and other similar operations.
- Use water or chemicals to control dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land.
- Apply asphalt, oil, water or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can give rise to airborne dusts.
- Pave roadways and maintain them in a clean condition.
- Promptly remove earth or other material from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water, or other means.

Rule 492 – National Emission Standards for Hazardous Air Pollutants. This rule incorporates the National Emission Standards for Hazardous Air Pollutants from Part 61, Chapter I, Subchapter C, Title 40, Code of Federal Regulations (CFR) and the National Emission Standards for Hazardous Air Pollutants for Source Categories from Part 63, Chapter I, Subchapter C, Title 40, Code of Federal Regulations (CFR).

Rule 485 – Architectural Coatings. The purpose of this rule is to limit Volatile Organic Compounds (VOC) emissions from architectural coatings. Emissions are reduced by limits on VOC content and providing requirements on coatings storage, cleanup, and labeling.

3.2.4 Local

The City of Healdsburg General Plan contains the following goals and policies applicable to the project:

- Goal NR-E: Reduce greenhouse gas emissions and increase energy efficiency communitywide.
  - Policy NR-E-1: The City will reduce greenhouse gas emissions produced communitywide.
  - Policy NR-E-2: The City will reduce greenhouse gas emissions produced by internal municipal operations.

  - Policy NR-E-3: The City will comply with California's Publicly Owned Electric Utilities' *Principles Addressing Greenhouse Gas Reduction Goals.*
  - Policy NR-E-4: The City will support sustainable development and building practices and lead by example in municipal projects.

- Goal NR-F: Protection and improvement of air quality in the Healdsburg area.
  - Policy NR-F-1: The City will encourage the use of transit systems and other alternatives to automobile use.
  - Policy NR-F-2: The City will promote land use patterns that support the use of transit systems and pedestrian and bicycle facilities.
  - Policy NR-F-3: The City will seek to minimize particulate matter emissions from wood-burning fireplaces and stoves, and construction activities.

4.0 GREENHOUSE GAS

4.1 ENVIRONMENTAL SETTING

To fully understand global climate change, it is important to recognize the naturally occurring "greenhouse effect" and to define the GHGs that contribute to this phenomenon. 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 the 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. GHGs, 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.

4.1.1 Local

Among the prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Primary GHGs attributed to global climate change, are discussed in the following subsections.

Carbon Dioxide

CO_2 is a colorless, odorless gas. CO_2 is emitted in a number of ways, both naturally and through human activities. The largest source of CO_2 emissions globally is the combustion of fossil fuels; e.g., coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. A number of specialized industrial production processes and product uses such as mineral production, metal production, and the use of petroleum-based products can also lead to CO_2 emissions. The atmospheric lifetime of CO_2 is variable because it is so readily exchanged in the atmosphere (EPA 2019a).

Methane

CH_4 is a colorless, odorless gas that is not flammable under most circumstances. CH_4 is the major component of natural gas, about 87% by volume. It is also formed and released to the atmosphere by biological processes occurring in anaerobic environments. CH_4 is emitted from a variety of both human-related and natural sources. Human-related sources include fossil fuel production, animal husbandry (enteric fermentation in livestock and manure management), rice cultivation, biomass burning, and waste management. These activities release significant quantities of methane to the atmosphere. Natural sources of methane include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources such as wildfires. The atmospheric lifetime of CH_4 is about 12 years (EPA 2019a).

Nitrous Oxide

N_2O is a clear, colorless gas with a slightly sweet odor. N_2O is produced by both natural and human-related sources. Primary human-related sources of N_2O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuels, adipic acid production, and nitric acid production. N_2O is also produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests. The atmospheric lifetime of N_2O is approximately 120 years (EPA 2017b).

Hydrofluorocarbons

HFCs are manufactured chemicals, many of which have been developed as alternatives to ozone-depleting substances for industrial, commercial, and consumer products. The only significant emissions of HFCs before 1990 were of the chemical HFC-23, which is generated as a byproduct of the production of HCFC-22 (or Freon 22, used in air conditioning applications). The atmospheric lifetime for HFCs varies from just over a year for HFC-152a to 260 years for HFC-23. Most of the commercially used HFCs have atmospheric lifetimes of less than 15 years (e.g., HFC-134a, which is used in automobile air conditioning and refrigeration, has an atmospheric life of 14 years) (EPA 2017b).

Perfluorocarbons

PFCs are colorless, highly dense, chemically inert, and nontoxic. There are seven PFC gases: perfluoromethane (CF_4), perfluoroethane (C_2F_6), perfluoropropane (C_3F_8), perfluorobutane (C_4F_{10}), perfluorocyclobutane (C_4F_8), perfluoropentane (C_5F_{12}), and perfluorohexane (C_6F_{14}). Natural geological emissions have been responsible for the PFCs that have accumulated in the atmosphere in the past; however, the largest current source is aluminum production, which releases perfluoromethane and perfluoroethane as byproducts. The estimated atmospheric lifetimes for perfluoromethane and perfluoroethane are 50,000 and 10,000 years, respectively (EPA 2017b).

Nitrogen Trifluoride

Nitrogen trifluoride (NF_3) is an inorganic, colorless, odorless, toxic, nonflammable gas used as an etchant in microelectronics. NF_3 is predominantly employed in the cleaning of the plasma-enhanced chemical vapor deposition chambers in the production of liquid crystal displays and silicon-based thin film solar cells. In 2009, NF_3 was listed by California as a potential GHG to be listed and regulated under AB 32 (Section 38505 Health and Safety Code).

Sulfur Hexafluoride

SF_6 is an inorganic compound that is colorless, odorless, nontoxic, and generally nonflammable. SF_6 is primarily used as an electrical insulator in high voltage equipment. The electric power industry uses roughly 80% of all SF_6 produced worldwide. Leaks of SF_6 occur from aging equipment and during equipment maintenance and servicing. SF_6 has an atmospheric life of 3,200 years (EPA 2017b).

Black Carbon

Black carbon is the most strongly light-absorbing component of PM emitted from burning fuels such as coal, diesel, and biomass. Black carbon contributes to climate change both directly by absorbing sunlight and indirectly by depositing on snow and by interacting with clouds and affecting cloud formation. Black carbon is considered a short-lived species, which can vary spatially and, consequently, it is very difficult to quantify associated global-warming potentials. The main sources of black carbon in California are wildfires, off-road vehicles (e.g., locomotives, marine vessels, tractors, excavators, dozers), on-road vehicles (e.g., cars, trucks, buses), fireplaces, agricultural waste burning, and prescribed burning (e.g., planned burns of forest or wildlands). California has been an international leader in reducing emissions of black carbon, including programs that target reducing PM from diesel engines and burning activities (CARB 2013).

4.1.2 Global Warming Potential

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. Often, estimates of GHG emissions are presented in carbon dioxide equivalents (CO_2e), which weight each gas by its global warming potential (GWP).

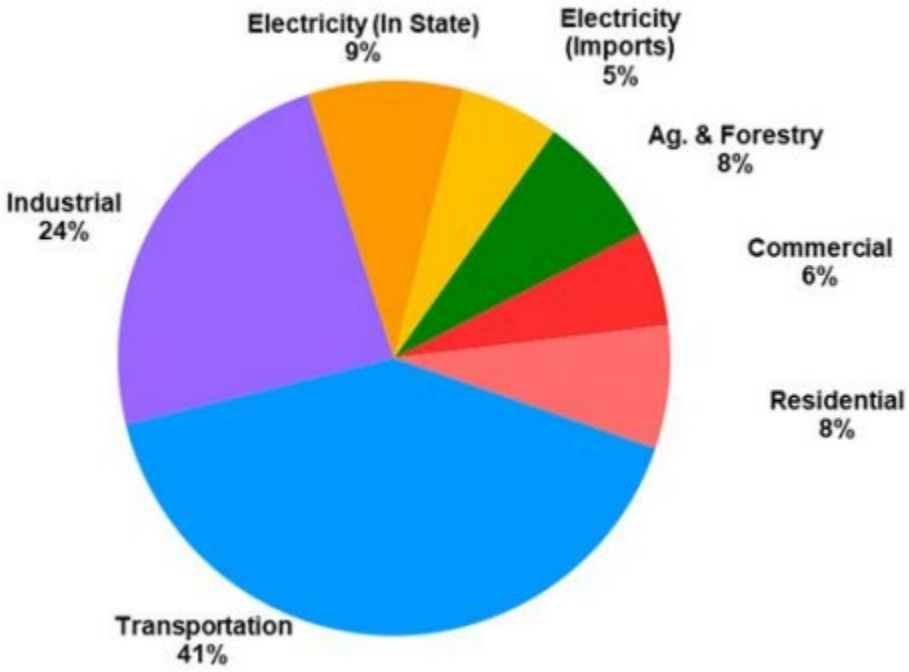
Expressing GHG emissions in CO2e takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted. Based on a 100-year time horizon, CH_4 traps over 25 times more heat per molecule than CO_2, and N_2O absorbs roughly 298 times more heat per molecule than CO_2. Additional GHGs with high GWP include NF_3, SF_6, PFCs, and black carbon.

4.1.3 Sources of Greenhouse Gas Emissions

On a global scale, GHG emissions are predominantly associated with activities related to energy production; changes in land use, such as deforestation and land clearing; industrial sources; agricultural activities; transportation; waste and wastewater generation; and commercial and residential land uses. World-wide, energy production including the burning of coal, natural gas, and oil for electricity and heat is the largest single source of global GHG emissions.

California's most recent GHG emissions inventory is depicted in Figure 2.

Figure 2: Greenhouse Gas Emissions by Economic Sector



Source: CARB 2021b.

The most recent GHG emissions inventory prepared by CARB shows that in 2019, GHG emissions within California totaled 418.1 million metric tons (MMT) of CO_2e. The transportation sector is the largest contributor, accounting for approximately 41% of the total statewide GHG emissions. Emissions associated with industrial uses are the second largest contributor, totaling roughly 24%. Electricity generation totaled roughly 14% (CARB 2021b).

4.1.4 Effects of Global Climate Change

There are uncertainties as to exactly what the climate changes will be in various local areas of the earth. There are also uncertainties associated with the magnitude and timing of other consequences of a warmer planet: sea level rise, spread of certain diseases out of their usual geographic range, the effect on agricultural production, water supply, sustainability of ecosystems, increased strength and frequency of storms, extreme heat events, increased air pollution episodes, and the consequence of these effects on the economy.

Within California, climate changes would likely alter the ecological characteristics of many ecosystems throughout the state. Such alterations would likely include increases in surface temperatures and changes in the form, timing, and intensity of precipitation. For instance, historical records are depicting an increasing trend toward earlier snowmelt in the Sierra Nevada. This snowpack is a principal supply of water for the state, providing roughly 50% of state's annual runoff. If this trend continues, some areas of the state may experience an increased danger of floods during the winter months and possible

exhaustion of the snowpack during spring and summer months. An earlier snowmelt would also impact the state's energy resources. An early exhaustion of the Sierra snowpack may force electricity producers to switch to more costly or non-renewable forms of electricity generation during spring and summer months. A changing climate may also impact agricultural crop yields, coastal structures, and biodiversity. As a result, resultant changes in climate will likely have detrimental effects on some of California's largest industries, including agriculture, wine, tourism, skiing, recreational and commercial fishing, and forestry.

4.2 REGULATORY SETTING

4.2.1 State

Assembly Bill 32

The California State Legislature enacted Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006. AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. "Greenhouse gases" as defined under AB 32 include CO_2, CH_4, NO_X, HFCs, PFCs, and SF_6. Since AB 32 was enacted, a seventh chemical, nitrogen trifluoride, has also been added to the list of GHGs. The California Air Resources Board (CARB) is the state agency charged with monitoring and regulating sources of GHGs. AB 32 states the following:

> *Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.*

CARB approved the 1990 GHG emissions level of 427 $MMTCO_2e$ on December 6, 2007 (CARB 2007). Therefore, to meet the state's target, emissions generated in California in 2020 are required to be equal to or less than 427 $MMTCO_2e$. Emissions in 2020 in a business-as-usual (BAU) scenario were estimated to be 596 $MMTCO_2e$, which do not account for reductions from AB 32 regulations (CARB 2008). At that rate, a 28 percent reduction was required to achieve the 427 $MMTCO_2e$ 1990 inventory. In October 2010, CARB prepared an updated 2020 forecast to account for the effects of the 2008 recession and slower forecasted growth. The 2020 inventory without the benefits of adopted regulation is now estimated at 545 $MMTCO_2e$. Therefore, under the updated forecast, a 21.7 percent reduction from BAU is required to achieve 1990 levels (CARB 2010).

Progress in Achieving Assembly Bill 32 Targets and Remaining Reductions Required

The state has made steady progress in implementing AB 32 and achieving targets included in EO S-3-05. The progress is evident in updated emission inventories prepared by CARB, which showed that the state inventory dropped below 1990 levels for the first time in 2016 (CARB 2018). CARB's Climate Change Scoping Plan (Scoping Plan) (subsequently amended by the 2017 update) includes projections indicating

that the state would meet or exceed the 2020 target with adopted regulations (CARB 2017). California met AB 32 goals in July 2018 (CARB 2018).

CARB 2008 Scoping Plan

The Scoping Plan contains measures designed to reduce the state's emissions to 1990 levels by the year 2020 to comply with AB 32 (CARB 2008). The Scoping Plan identifies recommended measures for multiple GHG emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. Most of the measures target the transportation and electricity sectors (CARB 2008).

Cap-and-Trade Program

The Cap-and-Trade Program is a key element of the Scoping Plan. It sets a statewide limit on sources responsible for 85 percent of California's GHG emissions and establishes a price signal needed to drive long-term investment in cleaner fuels and more efficient use of energy. The program is designed to provide covered entities the flexibility to seek out and implement the lowest cost options to reduce emissions. The program conducted its first auction in November 2012. Compliance obligations began for power plants and large industrial sources in January 2013. Other significant milestones include linkage to Quebec's Cap-and-Trade system in January 2014 and starting the compliance obligation for distributors of transportation fuels, natural gas, and other fuels in January 2015.

The Cap-and-Trade Program provides a firm cap, ensuring that the 2020 statewide emission limit would not be exceeded. An inherent feature of the Cap-and-Trade Program is that it does not guarantee GHG emissions reductions in any discrete location or by any particular source. Rather, GHG emissions reductions are guaranteed on an accumulative basis.

The Cap-and-Trade Program works with other direct regulatory measures and provides an economic incentive to reduce emissions. If California's direct regulatory measures reduce GHG emissions more than expected, then the Cap-and-Trade Program would be responsible for relatively fewer emissions reductions. If California's direct regulatory measures reduce GHG emissions less than expected, then the Cap-and-Trade Program would be responsible for relatively more emissions reductions. Thus, the Cap-and-Trade Program assures that California would meet its 2020 GHG emissions reduction mandate.

CARB approved the First Update to the Scoping Plan (Update) on May 22, 2014. The Update identified the next steps for California's climate change strategy. The Update shows how California continues on its path to meet the near-term 2020 GHG limit, but also sets a path toward long-term, deep GHG emission reductions. The report established a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050. California met AB 32 goals in July 2018 (CARB 2018).

Assembly Bill 398

The Governor signed AB 398 on July 25, 2017, to extend the Cap-and-Trade Program to 2030.The legislation includes provisions to ensure that offsets used by sources are limited to 4 percent of their compliance obligation from 2021 to 2025 and 6 percent of their compliance obligation from 2026 through

2030. AB 398 also prevents air districts from adopting or implementing emission reduction rules from stationary sources that are also subject to the Cap-and-Trade Program (CARB 2017).

Senate Bill 32

Senate Bill (SB) 32 was signed into law on September 8, 2016. SB 32 gives CARB the statutory responsibility to include the 2030 target previously contained in EO B-30-15 in the 2017 Scoping Plan Update. SB 32 states that "In adopting rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions authorized by this division, the state [air resources] board shall ensure that statewide greenhouse gas emissions are reduced to at least 40 percent below the statewide greenhouse gas emissions limit no later than December 31, 2030."

2017 Climate Change Scoping Plan Update

The 2017 Climate Change Scoping Plan Update was adopted on December 14, 2017, amending the 2008 Scoping Plan and addresses the SB 32 targets. The major elements of the framework proposed to achieve the 2030 target are as follows:

1. SB 350
    a. Achieve 50 percent Renewables Portfolio Standard (RPS) by 2030.
    b. Doubling of energy efficiency savings by 2030.
2. Low Carbon Fuel Standard
    a. Increased stringency (reducing carbon intensity 18 percent by 2030, up from 10 percent in 2020).
3. Mobile Source Strategy (Cleaner Technology and Fuels Scenario)
    a. Maintaining existing GHG standards for light- and heavy-duty vehicles.
    b. Put 4.2 million zero-emission vehicles on the roads.
    c. Increase zero-emission vehicles buses and delivery and other trucks.
4. Sustainable Freight Action Plan
    a. Improve freight system efficiency.
    b. Maximize use of near-zero emission vehicles and equipment powered by renewable energy.
    c. Deploy over 100,000 zero-emission trucks and equipment by 2030.
5. Short-Lived Climate Pollutant Reduction Strategy
    a. Reduce emissions of methane and hydrofluorocarbons 40 percent below 2013 levels by 2030.

   b. Reduce emissions of black carbon 50 percent below 2013 levels by 2030.

6. SB 375 Sustainable Communities Strategies

   a. Increased stringency of 2035 targets.

7. Post-2020 Cap-and-Trade Program

   a. Declining caps, continued linkage with Québec, and linkage to Ontario, Canada.

   b. CARB will look for opportunities to strengthen the program to support more air quality co-benefits, including specific program design elements. In Fall 2016, CARB staff described potential future amendments including reducing the offset usage limit, redesigning the allocation strategy to reduce free allocation to support increased technology and energy investment at covered entities and reducing allocation if the covered entity increases criteria or toxics emissions over some baseline.

8. 20 percent reduction in GHG emissions from the refinery sector.

9. Develop Integrated Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

Many of the measures included in the 2017 Climate Change Scoping Plan Update are implemented on a statewide level and do not specifically apply to the Project. However, the short-lived climate pollutants would be applicable to the Program through the use of cleaner construction equipment.

Senate Bill 375: The Sustainable Communities and Climate Protection Act of 2008

SB 375 was signed into law on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits more than 40 percent of the total GHG emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

CARB has prepared the Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets.

Assembly Bill 1493: Pavley Regulations and Fuel Efficiency Standards

AB 1493, enacted on July 22, 2002, required CARB to develop and adopt regulations and fuel efficiency standards that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by EPA's denial of an implementation waiver. EPA subsequently granted the requested waiver in 2009, which was upheld by the by the U.S. District Court for the District of Columbia in 2011.

The standards were phased in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards resulted in an approximately 22 percent reduction compared with the

2002 fleet, and the mid-term (2013–2016) standards resulted in about a 30 percent reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation, rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant.

The second phase of the implementation for AB 1493 was incorporated into Amendments to the Low-Emission Vehicle Program, referred to as LEV III or the Advanced Clean Cars program. The Advanced Clean Cars program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation would reduce GHGs from new cars by 34 percent from 2016 levels by 2025. The rules would reduce pollutants from gasoline and diesel-powered cars and would deliver increasing numbers of zero-emission technologies, such as full-battery electric cars, newly emerging plug-in hybrid electric vehicles, and hydrogen fuel cell cars. The regulations would also ensure that adequate fueling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California.

Senate Bill 1368: Emission Performance Standards

In 2006, the State Legislature adopted SB 1368, which was subsequently signed into law by the governor. SB 1368 directs the California Public Utilities Commission to adopt a performance standard for GHG emissions for the future power purchases of California utilities. SB 1368 seeks to limit carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than 5 years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant.

Because of the carbon content of its fuel source, a coal-fired plant cannot meet this standard because such plants emit roughly twice as much carbon as natural gas combined cycle plants. Accordingly, the new law effectively prevents California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the state. The California Public Utilities Commission adopted the regulations required by SB 1368 on August 29, 2007. The regulations implementing SB 1368 establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, of 1,100 pounds of CO_2 per megawatt-hour (MWh).

Senate Bill 1078: Renewable Electricity Standards

On September 12, 2002, the state governor signed SB 1078, requiring California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, the governor signed EO S-14-08, which established an RPS target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. The governor also signed EO S-21-09, which directed CARB to adopt a regulation by July 31, 2010, requiring the state's load serving entities to meet a 33 percent renewable energy target by 2020. CARB approved the Renewable Electricity Standard on September 23, 2010, by Resolution 10-23. In 2011, the

state legislature adopted this higher standard in SB X1-2. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas.

Senate Bill 350: Clean Energy and Pollution Reduction Act of 2015

The legislature approved and the governor then signed SB 350 on October 7, 2015, which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the RPS, higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations.

Senate Bill 100: California Renewables Portfolio Standard Program.

The governor approved SB 100 on September 10, 2018. The legislation revised the RPS goals to achieve the 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. The bill would require that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt hours of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024; 52 percent by December 31, 2027; and 60 percent by December 31, 2030.

Senate Bill X7-7: The Water Conservation Act of 2009

SB X7-7 directs urban retail water suppliers to set individual 2020 per capita water use targets and to begin implementing conservation measures to achieve those goals. Meeting this statewide goal of 20 percent decrease in demand will result in a reduction of almost 2 million acre-feet of urban water use in 2020.

Executive Order S-3-05

On June 1, 2005, the governor announced EO S-3-05, which announced the following reduction targets for GHG emissions:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that would stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an EO, the goals are not legally enforceable for local governments or the private sector.

Executive Order B-30-15

On April 29, 2015, the state governor issued EO B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The EO aligns California's GHG reduction targets with those of leading international governments ahead of the United Nations Climate Change Conference in Paris in late 2015. The EO sets a new interim statewide GHG emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 in order to ensure that California meets its target of reducing

GHG emissions to 80 percent below 1990 levels by 2050. The EO also directs CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of $MMTCO_2e$. The EO requires the state's climate adaptation plan to be updated every 3 years and for the state to continue its climate change research program, among other provisions. As with EO S-3-05, this EO is not legally enforceable against local governments and the private sector. Legislation that would update AB 32 to provide post-2020 targets was signed by the governor in 2016. SB 32 includes a 2030 mandate matching the requirements of the EO.

Executive Order S-01-07: Low Carbon Fuel Standard

The governor signed EO S 01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. In particular, the EO established a Low Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, CARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by California Energy Commission on December 24, 2007) and was submitted to CARB for consideration as an "early action" item under AB 32. CARB adopted the Low Carbon Fuel Standard on April 23, 2009.

The LCFS was subject to legal challenge in 2011. Ultimately, CARB was required to bring a new LCFS regulation for consideration in February 2015. The proposed LCFS regulation was required to contain revisions to the 2010 LCFS as well as new provisions designed to foster investments in the production of the low-carbon fuels, offer additional flexibility to regulated parties, update critical technical information, simplify, and streamline program operations, and enhance enforcement. The Office of Administrative Law approved the regulation on November 16, 2015. The regulation was last amended in 2018.

Executive Order S-13-08

EO S-13-08 states that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in the EO, the 2009 California Climate Adaptation Strategy was adopted, which is the "… first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Executive Order B-55-18

EO B-55-18 issued by the governor on September 10, 2018, establishes a new statewide goal to achieve carbon neutrality as soon as possible, but no later than 2045, and to achieve and maintain net negative emissions thereafter. The EO directs CARB to work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward this goal.

California Energy Code

Compliance with the California Energy Code (Title 24, Part 6, of the California Code of Regulations [CCR], California's Energy Efficiency Standards) and Title 20, Public Utilities and Energy, standards must occur for all new buildings constructed in California. These efficiency standards apply to new construction of both residential and nonresidential (i.e., maintenance buildings and pump station buildings associated with the Program) buildings, and they regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. The building efficiency standards are enforced through the local building permit processes, and local government agencies may adopt and enforce energy standards for new buildings provided that these standards meet or exceed those provided in the Title 24 guidelines.

4.2.2 Regional

Sonoma County Climate Action Plan

The Sonoma County Climate Action Plan (CAP) 2020 and Beyond was adopted in July 2016 with the goal of reducing county-wide emissions to 25% below 1990 levels by 2020. The CAP includes a series of measures aimed at cities and agencies to adopt to reduce GHG emissions from the energy, transportation, land use, and other economic sectors. The CAP identifies specific GHG measures for every city within the County based on individual General Plans (Sonoma County, 2016).

5.0 AIR QUALITY IMPACT ANALYSIS

This section calculates the expected emissions from construction and operation of the Project as a necessary requisite for assessing the regulatory significance of the Project emissions on a regional and localized level.

5.1 CEQA GUIDELINES

According to the CEQA Guidelines' Appendix G Environmental Checklist, the following questions are analyzed and evaluated to determine whether impacts to air quality are significant environmental effects. Where available, the significance criteria established by the applicable air quality management or air pollution district may be relied upon to make the following determinations.

Would the Project:

a) Conflict with or obstruct implementation of the applicable air quality plan?

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

c) Expose sensitive receptors to substantial pollutant concentrations?

d) Result in other emissions (such as those leading to odors) affecting a substantial number of people?

5.1.1 Thresholds of Significance

While the final determination of whether a project is significant is within the purview of the Lead Agency pursuant to Section 15064(b) of the CEQA Guidelines, the NSCAPCD does not have any CEQA Guidelines for individual development projects. The NSCAPCD recommends that projects use BAAQMD quantitative air thresholds (Table 4) to determine the significance of project emissions. If the Lead Agency finds that the project has the potential to exceed these air pollution thresholds, the project should be considered to have significant air quality impacts.

Table 4: BAAQMD Significance Thresholds

Pollutant	Construction-Related Thresholds (lbs/day)	Operational-Related	
		Average Daily Emissions (lbs/day)	Maximum Annual Emissions (tpy)
Reactive Organic Gases	54	54	10
Oxides of Nitrogen	54	54	10
Particulate Matter 10 Microns or Smaller	82 (exhaust)	82	15
Particulate Matter 2.5 Microns or Smaller	54 (exhaust)	54	10

Source: BAAQMD 2017
Key: lbs/day = pounds per day; tpy = tons per year

5.2 AIR IMPACT ANALYSIS

Impact AIR-1 Conflict with or obstruct implementation of the applicable air quality plan?

Impact Analysis

The CEQA Guidelines indicate that a significant impact would occur if the Project would conflict with or obstruct implementation of the applicable air quality plan. Air districts are required to prepare air quality plans to identify strategies to bring regional emissions into compliance with federal and state air quality standards. Northern Sonoma County and the NCAB is in federal and state attainment for all air pollutants. As a result, the NSCAPCD does not have an air quality plan, therefore, the Project would not obstruct implementation of an applicable air quality plan.

A measure of determining if a project is consistent with air quality plans in other air districts is if the proposed project would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations. Projects would conflict with a plan if they exceeded any emissions for which the region is in nonattainment. Air districts establish emissions thresholds for individual projects to demonstrate the point at which a project would be considered to increase the air quality violations. Projects that exceed thresholds would be considered to conflict with an air quality plan. As described under Impact AIR-2, the proposed project would fall below thresholds established by the BAAQMD. Since the proposed project does not exceed BAAQMD thresholds, it is not anticipated to conflict with or obstruct an air quality plan if one were applicable. As a result, the impact is less than significant.

Conclusion

The Project would not conflict with or obstruct implementation of the applicable AQPs.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

None are required.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact AIR-2 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard?

Impact Analysis

In developing thresholds of significance for air pollutants, the BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions.

In addition to project-specific thresholds, the BAAQMD identified screening criteria to provide lead agencies and project applicants with a conservative indication of whether the proposed project could result in potentially significant air quality impacts. If all screening criteria are met by a proposed project, then the lead agency or applicant would not need to perform a detailed air quality assessment of their project's air pollutant emissions. The screening criteria are meant to represent greenfield development and do not account for project design features that would reduce air quality emissions. The project proposes to construct a 58-unit, 4-story residential apartment complex on a vacant site. The BAAQMD criteria air pollutant screening criteria thresholds for mid-rise apartments are 240 dwelling units and 494 dwelling units for construction and operation, respectively. The proposed project falls below the screening thresholds, and a detailed air quality analysis is not required. Therefore, impacts are considered less than significant and would not be cumulatively considerable.

Conclusion

The proposed Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

None are required.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact AIR-3 Expose sensitive receptors to substantial pollutant concentrations?

Impact Analysis

This discussion addresses whether the project would expose sensitive receptors to construction-generated fugitive dust (PM_{10}), naturally occurring asbestos (NOA), construction-generated DPM, operational related TACs, or operational CO hotspots. According to CARB, some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Heightened sensitivity may be caused by health problems, proximity to the emissions source, or duration of exposure to air pollutants. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Accordingly, land uses that are typically considered to be sensitive receptors include residences, schools, childcare centers, playgrounds, retirement homes, convalescent homes, hospitals, and medical clinics.

Construction Emissions

Fugitive Dust (PM_{10})

Fugitive dust (PM_{10}) would be generated from site grading and other earth-moving activities. Most of this fugitive dust would remain localized and would be deposited near the Project site. However, the potential for impacts from fugitive dust exists unless control measures are implemented to reduce the emissions from the Project site. The Project would comply with NSCAPCD Rule 430 Fugitive Dust to reduce particulate emissions during construction.

Naturally Occurring Asbestos

Construction in areas of rock formations that contain NOA could release asbestos to the air and pose a health hazard. BAAQMD enforces CARB's air toxic control measures at sites that contain ultramafic rock. The air toxic control measures for construction, grading, quarrying, and surface mining operations were signed into state law on July 22, 2002, and became effective in the Air Basin in November 2002. The purpose of this regulation is to reduce public exposure to NOA. A review of the map with areas more likely to have rock formations containing NOA in California indicates that there is no asbestos in the immediate project area (USGS 2011). Therefore, it can be reasonably concluded that the project would not expose sensitive receptors to NOA. Impacts would be less than significant.

Diesel Particulate Matter (DPM)

Exposure to DPM from diesel vehicles and off-road construction equipment can result in health risks to nearby sensitive receptors. The Project site is surrounded by commercial land uses with the nearest residence located approximately 530 feet south of the project site. While construction of the Project would involve the use of diesel fueled vehicles and off-road equipment, exposure would be minor and temporary as the Project size falls far below the BAAQMD construction screening thresholds. DPM emissions have

also been shown to be reduced by approximately 60 percent at a distance of around 300 feet from a source (CARB 2005). Therefore, construction of the proposed Project would not result in a health risk exposure from DPM.

Operations

The greatest potential during long-term operations for exposure to TACs is from the use of heavy-duty diesel trucks and stationary generators that use diesel fuel. The Project is a 58-unit residential development. Once operational, the majority of vehicle trips to the Project site would be from residents and, as a result, the proposed Project would attract very few diesel truck trips. Additionally, the Project does not propose any stationary generators on-site. For these reasons, once operational, the proposed Project would not be expected to expose nearby sensitive receptors to substantial amounts of air toxics.

Once operational, the Project would be considered a sensitive receptor, and future residents could be exposed to TAC emissions from nearby mobile and stationary sources. The CARB Air Quality and Land Use Handbook contains recommendations that will "help keep California's children and other vulnerable populations out of harm's way with respect to nearby sources of air pollution" (CARB 2005), including recommendations for distances between sensitive receptors and certain land uses. In the California Building Industry Association v. Bay Area Air Quality Management District [CBIA v. BAAQMD], 62 Cal.4th 369 (2015) (Case No. S213478) the California Supreme Court held that "agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents. But when a proposed project risks exacerbating those environmental hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the project's impact on the environment—and not the environment's impact on the project—that compels an evaluation of how future residents or users could be affected by exacerbated conditions." Although the Court ruled that impacts from the existing environment on projects are not required to be addressed under CEQA, land uses such as gasoline stations, dry cleaners, distribution centers, and auto body shops can expose residents to high levels of TAC emissions if they are in proximity of the project site. Information regarding the location of existing TAC sources is provided for disclosure purposes only and not as a measure of the Project's significance under CEQA.

Consistency with these recommendations is assessed as follows:

- **Heavily traveled roads.** CARB recommends avoiding new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day. Epidemiological studies indicate that the distance from the roadway and truck traffic densities were key factors in the correlation of health effects, particularly in children.

  The Project site lies approximately 850 feet east of U.S. Highway 101. According to Caltrans, this segment of U.S. 101 at the Dry Creek Road exit has an annual average daily trip count of 45,200 vehicles per day (California Open Data 2019). Therefore, the site is not located within 500 feet of a highway, and the nearest highway's average daily trip rate is less than 100,000 vehicles per

day. Additionally, there are no urban or rural roadways where vehicle traffic exceeds 100,000 vehicles per day or 50,000 vehicles per day, respectively near the Project site.

- **Distribution centers.** CARB also recommends avoiding siting new sensitive land uses within 1,000 feet of a distribution center.

  The Project is not located within 1,000 feet of a distribution center.

- **Fueling stations.** CARB recommends avoiding new sensitive land uses within 300 feet of a large fueling station, which is a facility with a throughput of 3.6 million gallons per year or greater (e.g. Costco fuel station). CARB recommends a 50-foot separation is recommended for typical gas dispensing facilities.

  There are three gas stations located near the project site. A Valero Gas Station is located approximately 200 feet southwest of the project boundary at Grove Street and Dry Creek Road, a Chevron station is located approximately 800 feet northwest of the project boundary at Healdsburg Avenue and Sunnyvale Drive. The Healdsburg Gas Mart lies approximately 550 feet east of the project site along Dry Creek Road and Healdsburg Avenue. None of the nearby fuel stations would be considered a large fueling station. The Project site is over 50 feet from any gas station and is consistent with CARB recommendations.

- **Dry cleaning operations.** CARB recommends avoiding siting new sensitive land uses within 300 feet of any dry-cleaning operation that uses perchloroethylene. For operations with two or more machines, ARB recommends a buffer of 500 feet. For operations with three or more machines, ARB recommends consultation with the local air district.

  The nearest dry-cleaning operation is located approximately 775 feet east of the project site along Terrace Blvd. The Project site is over 500 feet from a dry-cleaning operation and is consistent with CARB recommendations.

- **Auto body shops.** Auto body shops have the potential to emit TACs related to painting. The CARB does not provide a recommended distance for locating sensitive receptors with respect to auto body shops, however, potential impacts are localized near the facility.

  The Project site lies within 350 feet of the McConnel Chevrolet and 550 feet of the McConnel Chrysler Dodge Jeep Dealers (both located northeast of the Project site). Both dealerships mainly sell automobiles and perform some limited car services and repairs. The site is also approximately 560 feet of a NAPA Auto Body Parts (northwest of the Project site). Painting is expected to be minimal from the dealership locations as most auto service repairs will be for tire changes and engine repairs and the NAPA Autobody shop only sells auto parts. Based on the distance to these facilities and minimal auto body painting activity, these facilities would not result in a measurable impact.

In addition, the Project site would lie next to the future SMART passenger rail line. The SMART passenger rail runs with clean-diesel engines that meet EPA's Tier 4 emissions standards. Tier 4 engines reduce PM and NOx emissions by 96% and 93%, respectively, as compared to regular diesel engines (SMART 2020). Therefore, it is not a significant source of TAC emissions once in operation.

The Project is not among those uses considered potential sources of TAC emissions. Therefore, no additional analysis is required to determine that this impact would be less than significant.

Conclusion

Sensitive receptors would not be exposed to substantial pollutant concentrations.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

None are required.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact AIR-4 Result in other emissions (such as those leading to odors) affecting a substantial number of people?

Impact Analysis

Project Construction

Diesel exhaust and ROGs/volatile organic compounds would be emitted during construction of the Project from equipment exhaust, painting, and paving activities, which are objectionable to some people. However, construction activities would be minimal and short-term, and emissions would disperse rapidly from the Project site. Therefore, Project construction would not create objectionable odors affecting a substantial number of people. As such, construction odor would be less than significant.

Project Operation

Land uses typically considered associated with odors include wastewater treatment facilities, waste-disposal facilities, or agricultural operations. The Project does not contain land uses typically associated with emitting objectionable odors. The NSAPCD has not established recommended distances residents or other sensitive receptors should be placed from odorous land uses. However, BAAQMD's 2017 Air Quality Guidelines Table 3-3 provides recommended odor screening distances. Projects that would site an odor source or a receptor farther than the applicable screening distance would not likely result in a significant odor impact. The Project site is not located within the screening distances recommended by

the BAAQMD to any potential odor sources and is not a source of odors itself, and as such, this would be less than significant.

Conclusion

The proposed Project would not create objectionable odors affecting a substantial number of people.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

5.3 NEPA AIR QUALITY ASSESSMENT

The area is in attainment for all criteria air pollutants; therefore, it is exempt from a conformity analysis. In in order to quantitatively demonstrate that the Project will not create an adverse effect, construction and operational emissions were compared to maintenance-level *de minimis* thresholds to demonstrate federal conformity.

Table 5: Construction Criteria Air Pollutant Emissions

Construction Year	ROG/VOC	NOX	CO	SO2	PM_{10}	$PM_{2.5}$
	tons/year					
2022	0.16	1.41	1.46	0.003	0.20	0.12
2023	1.26	0.79	0.98	0.002	0.07	0.04
De minimis threshold (tons/year)	100	100	100	100	100	100
Any Year Exceed Threshold?	No	No	No	No	No	No
Adverse Effect?	No	No	No	No	No	No

Table 6: Operational Criteria Air Pollutant Emissions

Source	ROG	NOX	CO	SO2	PM10	PM2.5
	tons/year					
Area	0.42	0.005	0.43	<0.0001	0.002	0.002
Energy	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.16	0.23	1.52	0.003	0.28	0.08
Waste	0.00	0.00	0.00	0.00	0.00	0.00
Water	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.58**	**0.24**	**1.95**	**0.003**	**0.28**	**0.08**
De minimis threshold (tons/year)	100	100	100	100	100	100
Exceed Threshold?	No	No	No	No	No	No
Adverse Effect?	No	No	No	No	No	No

As shown in Table 5 and Table 6, construction and operational emissions would be less than the federal de minimis thresholds. As a result, the Project would not result in an adverse effect to air quality and would conform with the Clean Air Act.

6.0 GREENHOUSE GAS IMPACT ANALYSIS

6.1 CEQA GUIDELINES

The CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine if a project would have a significant impact on GHGs, the type, level, and impact of emissions generated by the project must be evaluated. The following GHG significance thresholds are contained in Appendix G of the CEQA Guidelines.

Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or

b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

This section discusses potential impacts concerning greenhouse gases associated with the proposed project and provides mitigation measures where necessary.

6.1.1 Thresholds

The NSCAPCD does not provide guidance on evaluating GHG emissions. However, the BAAQMD does provide guidance with the 2017 CEQA Guidelines. The BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. However, the BAAQMD recommends quantification and disclosure of GHG construction emissions. Determining the significance of these construction-generated GHG emission impacts is recommended to be made in relation to meeting AB 32 GHG reduction goals, which requires the state to meet 1990 levels of GHG emissions by 2020.

Since GHG emissions are cumulative and construction emission are temporary and short term, it is common practice to amortize the total construction GHG emissions over 30 years to create an annual emissions rate that is combined with the operational GHG emissions for determining significance.

The BAAQMD's 2017 CEQA Guidelines provide numeric thresholds for GHG emissions during project operation for projects to demonstrate compliance with AB 32. A proposed land use development project would not have a significant GHG impact if operation of the project would meet one of the following thresholds:

- Compliance with a qualified greenhouse gas reduction strategy
- Annual emissions less than 1,100 metric tons per year (MT/yr) of CO_2e
- 4.6 metric tons of CO_2e per service population per year (MT CO_2e/SP/yr)

These thresholds were developed based on meeting the 2020 GHG targets of reducing statewide GHG emissions to 1990 levels by 2020, as established by CARB's Scoping Plan to meet AB 32 and for which

emissions reduction strategies were set forth in CARB's Scoping Plan. Although BAAQMD has not published a quantified threshold to meet SB 32 reductions yet, this assessment uses an adjusted mass rate threshold of 660 MT CO_2e/year (a 40 percent linear reduction from the BAAQMD 1,100 $MTCO_2e$ per year) based on the GHG reduction goals of SB 32 GHG emissions reduction regulatory framework, which established a 2030 GHG emissions reduction target of 40 percent below 1990 levels.

6.2 GHG IMPACT ANALYSIS

Impact GHG-1 Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Impact Analysis

The following emissions estimate is consistent with CEQA Guidelines 15064.4. GHG emissions were quantified with the California Emissions Estimator Model (CalEEMod) version 2020.4.0. Modeling includes emissions from the 58 residential units, the 97-space surface parking lot, and the 3,400 square feet of combined playground space. CalEEMod populates the model with corresponding default assumptions based on the project's land uses, land use sizes, and location. The model prepared for this analysis relied on modeling default assumptions for the construction schedule, construction vehicle trips, and construction equipment. The construction schedule utilized in the analysis represents a "worst-case" analysis scenario since emission factors for construction equipment decrease as the analysis year increases, due to improvements in technology and more stringent regulatory requirements. Therefore, construction emissions would decrease if the construction schedule moved to later years. The duration of construction activity and associated equipment represent a reasonable approximation of the expected construction fleet as required per CEQA guidelines.

Minor filling may be required for the proposed project to lift the building footprint out of the floodplain. As a result, soil import was conservatively assumed to be approximately 2,000 cubic yards. An additional 2,500 cubic yards of soil would be cut to fill onsite. During operation of the Proposed Project, the vehicle trip rates were updated to reflect the Traffic Memo prepared by W-Trans. Finally, the project is designed to be all electric. As a result, all natural gas and wood burning devices were removed from the model.

Constructions Emission Inventory

Construction GHGs would be emitted by the off-road construction equipment and vehicle travel by workers and material deliveries to the Project site. The estimated construction GHG emissions are shown in Table 7: Because construction GHG emissions are temporary and reduction measures are limited, a common professional practice is to amortize the construction emissions over the life of the project. A residential project is conservatively assumed to have a life of 30 years.

Table 7: Construction Greenhouse Gas Emissions

Construction Year	Metric Tons of Carbon Dioxide Equivalents
2022	270

Construction Year	Metric Tons of Carbon Dioxide Equivalents
2023	167
Total	**437**
Amortized over 30 years[1]	15

Notes:
1. GHG emissions are amortized over the 30-year life of the proposed project.
Source: Stantec 2021, CalEEMod 2020.4.0.

Operational Emission Inventory

The BAAQMD identified screening criteria to provide lead agencies and project applicants with a conservative indication of whether the proposed project could result in potentially significant GHG impacts. If all screening criteria are met by a proposed project, then the lead agency or applicant would not need to perform a detailed, quantitative assessment of their project's GHG emissions. The project proposes to construct a 58-unit, 4-story residential apartment complex on a vacant site. The BAAQMD GHG screening criteria thresholds for mid-rise apartments is 87 dwelling units. The proposed Project falls below the screening thresholds; therefore, it would fall below BAAQMD GHG thresholds. However, the BAAQMD GHG thresholds were established to meet AB 32 and do not account for the emissions reductions necessary to meet the state's 2030 GHG reduction goals under SB 32. As such, operational GHG emissions for the Project were modeled within CalEEMod 2020.4.0 to estimate the long-term annual GHG emissions compared to an adjusted 2030 mass rate threshold. Sources of emissions may include motor vehicles and trucks, energy usage, water usage, waste generation, and area sources, such as landscaping activities and residential woodburning.

Operational GHG emissions are shown in Table 8.

Table 8: Operational Greenhouse Gas Emissions

Source	Emissions (Metric Tons of Carbon Dioxide Equivalents Per Year)
Area	1
Energy	22
Mobile	268
Waste	14
Water	8
Subtotal	*313*
Amortized Construction Emissions	15
Total	**328**
Adjusted 2030 Mass Rate Thresholds	**660**
Exceed?	*No*

Source: Stantec 2021, CalEEMod 2020.4.0 (Appendix A).

The proposed Project's GHG impact would not exceed an adjusted 2030 mass rate threshold. The Project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. The impact is less than significant.

Conclusion

The Project would not generate GHG emissions that may have a significant impact on the environment.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact GHG-2 Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The proposed project would have a significant impact with respect to GHG emissions and global climate change if it would substantially conflict with the provisions of Section 15064.4(b) of the CEQA Guidelines.

Pursuant to Appendix G of the CEQA Guidelines, a significant GHG impact is identified if the project could conflict with applicable GHG reduction plans, policies, or regulations. Development projects would be subject to complying with SB 32, CARB's 2017 Scoping Plan, Sonoma County's CAP, and the City's applicable goals. SB 32 is a statewide reduction goal aimed at reducing emissions to 40% below 1990 levels by 2030. CARB's 2017 Scoping Plan sets a framework for the State to meet the reduction targets of SB 32.

Consistency with the Sonoma County Climate Action Plan

Sonoma County adopted a CAP in 2016 to meet AB 32 reduction goals. The County's CAP is aimed at reducing emissions from local governments and county-wide agencies and presents measures specific to the City of Healdsburg to implement. Many of the measures listed in the CAP are derived from the City's General Plan and are not relevant to individual development projects. Table 9 identifies the measures applicable to the proposed project.

Table 9: Project Consistency with Applicable Sonoma County CAP's Healdsburg Reduction Measures

Measure	Consistency Determination
Building Energy	
Green Building Program: Municipal Code Chapter 15.16 required California Green Building Code compliance above and beyond the State Building Standards when any of the following are triggered: • Reconstruction of residential buildings of any size – Mandatory Measures. • New residential construction over 3,000 sq ft – Tier 1 Residential. • Reconstruction of nonresidential buildings containing 5,000 sq ft or more – Mandatory Measures. • New nonresidential construction over 10,000 sq ft – Tier 1 Nonresidential.	**Consistent.** The proposed Project would include over 3,000 sq ft of new residential construction and is required to meet Tier 1 Residential standards. The Project would meet and exceed the Tier 1 standards. The site is an infill site located near existing transit and future transit projects. The site proposes to be completely electric and generate electricity on-site through solar paneling on the rooftop. Energy-efficient design features would also be included. For example, building design orientation would maximize exposure to winter sun and avoid summer heat and would incorporate design features that conserve energy and materials that reduce energy consumption, including light-colored surface material that reflects heat.
Land Use and Transportation	
Foss Creek Pathway Plan: 4.1-mile bike path running north and south through Healdsburg. Connects to Old Redwood Highway and Windsor.	**Consistent.** The City of Healdsburg recently completed construction of the Foss Creek Pathway which runs adjacent to the project site on its eastern side. The site would support this endeavor by including bicycle parking on-site and designing the project to have easy access to the pathway.
Land uses surrounding transit: General Plan Policy LU-F-1. Land uses adjacent to transit facilities should derive maximum benefit from transit facilities and may include retail, office employment and high-density residential uses.	**Consistent.** The Project would construct 58 low-income residential units on an infill lot near existing transit services along Healdsburg Avenue and Grove Street and lies adjacent to the NCRA right-of-way where Sonoma-Marin Area Rail Transit is planning future passenger rail service.
Water and Wastewater Efficiency Resolution No. 58-2013: Stage 1 Voluntary Water Conservation Measures. Seeks a 20% reduction in water consumption from 2012.	**Consistent.** The Project would incorporate sustainable building practices into the project design including water conservation measures. It would comply with CalGreen standards which include water conservation measures.
Water Efficient Landscape Ordinance No. 1091: The ordinance promotes the efficient design and installation of water-efficient landscapes in Healdsburg associated with new construction and substantial alterations of existing development where landscapes are proposed.	**Consistent.** The Project's landscaping would include drought-tolerant plant material that is native to the area.

Source of Measures: Sonoma County 2016.
Source of Consistency Determination: Stantec Consulting Services Inc. 2022
Key: sq ft = square feet

Consistency with the Final 2017 Scoping Plan Update

CARB issued the Final 2017 Scoping Plan Update in November 2017 and established emissions reduction strategies necessary to meet SB 32's 2030 reduction goals. Table 10 identifies the Scoping Plan policies that are applicable to the Project.

Table 10: Project Consistency with Applicable 2017 Scoping Plan Greenhouse Gas Reduction Strategies

Measure Name	Measure Description	Consistency Determination
SB 350 50% Renewable Mandate.	Utilities subject to the legislation will be required to increase their renewable energy mix from 33% in 2020 to 50% in 2030.	**Consistent.** The Project would purchase electricity from a utility subject to the SB 350 Renewable Mandate. In addition, the Project includes renewable energy through rooftop solar systems on the proposed buildings and carports.
Low Carbon Fuel Standard	This measure requires fuel providers to meet an 18% reduction in carbon content by 2030.	**Consistent.** Vehicles accessing the Project site would use fuel containing lower carbon content as the fuel standard is implemented.
Mobile Source Strategy (Cleaner Technology and Fuels Scenario)	Vehicle manufacturers will be required to meet existing regulations mandated by the LEV III and Heavy-Duty Vehicle programs. The strategy includes a goal of having 4.2 million zero-emission vehicles (ZEVs) on the road by 2030 and increasing numbers of ZEV trucks and buses.	**Consistent.** Future residents could be expected to purchase increasing numbers of more fuel-efficient and zero-emission cars and trucks each year. The Project would include 2 electric vehicle parking spaces. Home deliveries would be made by increasing numbers of ZEV delivery trucks.
Short-Lived Climate Pollutant (SLCP) Reduction Strategy	The strategy requires the reduction of SLCPs by 40% from 2013 levels by 2030 and the reduction of black carbon by 50% from 2013 levels by 2030.	**Consistent.** The Project would be completely electric. Therefore, the Project would not generate black carbon from burning.
SB 375 Sustainable Communities Strategies	Requires Regional Transportation Plans to include a sustainable communities' strategy for reduction of per capita vehicle miles traveled.	**Consistent.** The Project would provide low-income housing in a region that is consistent with the growth projections in the applicable Regional Transportation Plan. The Project would not be within an Sustainable Communities Strategies priority area and is not subject to requirements applicable to those areas. Furthermore, the Project site lies near existing transit services along Healdsburg Avenue and Grove Street and adjacent to the NCRA right-of-way where Sonoma-Marin Area Rail Transit is planning future passenger rail service. The Project would also include bicycle parking to reduce vehicle miles traveled.

Measure Name	Measure Description	Consistency Determination
Post-2020 Cap-and-Trade Program	The Post 2020 Cap-and-Trade Program continues the existing program for another 10 years. The Cap-and-Trade Program applies to large industrial sources such as power plants, refineries, and cement manufacturers.	**Consistent.** The post-2020 Cap-and-Trade Program indirectly affects people who use the products and services produced by the regulated industrial sources when increased cost of products or services (such as electricity and fuel) are transferred to the consumers. The Cap-and-Trade Program covers the greenhouse gas (GHG) emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with California Environmental Quality Act projects' electricity usage are covered by the Cap-and-Trade Program. The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the program's first compliance period. The project is consistent with this measure by virtue of its use of electricity and natural gas from California public utilities.

Source of Measures: CARB, 2017
Source of Consistency Determination: Stantec Consulting Services Inc, 2021

Based on this evaluation, this analysis finds the Project would be consistent with all feasible and applicable strategies recommended in the 2017 Scoping Plan Update.

The Project would construct 58 low-income residential units on an infill lot. The site would include all-electric buildings with solar panels to generate electricity on-site. The project has been designed to include water and energy efficiency features as well as passive solar design and natural landscaping. The site is located near existing bus lines along Healdsburg Avenue and Grove Street and lies adjacent to the NCRA right-of-way where Sonoma-Marin Area Rail Transit is planning future passenger rail service. The Project would place residents within walking distance of transit options. The site is also located directly adjacent to the recently constructed Foss Creek Pathway. Finally, the Project would adhere to Title 24 and the latest California Building Standards. The Project would not conflict with the goals and objectives of the Sonoma County CAP, with CARB's 2017 Scoping Plan, or any other State or regional plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions.

Based on this evaluation, this analysis finds the Project would be consistent with all feasible and applicable strategies recommended in the Sonoma County CAP for the City of Healdsburg.

Conclusion

The proposed project would not conflict with an applicable plan; therefore, impacts would be considered less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

6.3 NEPA GREENHOUSE GAS ASSESSMENT

There are no federal numeric thresholds that delineate when a proposed action may have an adverse effect. The Council on Environmental Quality (CEQ) Draft Guidance indicates that where possible, greenhouse gas (GHG) emissions should be quantified and reported. As noted by CEQ, “climate change is a particularly complex challenge given its global nature and inherent interrelationships among its sources, causation, mechanisms of action and impacts….” Given the enormity of GHG emissions worldwide, the contributions of one Project, such as that of the Proposed Action/Project, are negligible.

While the federal government has not adopted any numeric thresholds to determine what constitutes a substantial amount of GHG emissions, the Final Mandatory Reporting of Greenhouse Gases Rule uses a metric of 25,000 metric tons of carbon dioxide equivalent ($MTCO_2e$) for establishing the level at which a source becomes substantial enough that it should be reported.

The GHG emissions associated with construction of the Project would be 437 MTCO2e and operational GHG emissions would be 313 MTCO2e (see Tables 7 and 8 above). Since emissions would be less than the Mandatory Reporting Thresholds, the GHG emissions from the Project are expected to be negligible and would not have an adverse effect.

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APPENDIX A

CRITERIA AIR POLLUTANT AND GHG EMISSIONS RESULTS

Dry Creek Commons - Sonoma-North Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Dry Creek Commons

Sonoma-North Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	3.40	1000sqft	0.08	3,400.00	0
Parking Lot	97.00	Space	0.87	38,800.00	0
City Park	1.12	Acre	1.12	48,787.20	0
Apartments Mid Rise	58.00	Dwelling Unit	1.46	73,576.00	166

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	75
Climate Zone	4			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Other non-asphalt land use accounts for central plaza (2,100 SF) and Play Area (1,300 SF)

Construction Phase -

Grading -

Vehicle Trips - Based on W Trans traffic study

Woodstoves - N fireplaces

Energy Use - Includes natural gas demand converted to kwh

Trips and VMT -

Dry Creek Commons - Sonoma-North Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblEnergyUse	NT24E	3,054.10	3,055.10
tblEnergyUse	NT24NG	3,155.00	0.00
tblEnergyUse	T24E	70.89	73.00
tblEnergyUse	T24NG	5,226.68	0.00
tblFireplaces	NumberGas	31.90	0.00
tblFireplaces	NumberNoFireplace	5.80	0.00
tblFireplaces	NumberWood	20.30	0.00
tblGrading	MaterialExported	0.00	2,500.00
tblGrading	MaterialImported	0.00	2,000.00
tblLandUse	LandUseSquareFeet	58,000.00	73,576.00
tblLandUse	LotAcreage	1.53	1.46
tblVehicleTrips	ST_TR	4.91	4.54
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	SU_TR	4.09	4.54
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	WD_TR	5.44	4.54
tblVehicleTrips	WD_TR	0.78	0.00
tblWoodstoves	NumberCatalytic	2.90	0.00
tblWoodstoves	NumberNoncatalytic	2.90	0.00

Dry Creek Commons - Sonoma-North Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					
2022	0.1614	1.4121	1.4612	3.0000e-003	0.1367	0.0660	0.2028	0.0550	0.0620	0.1169	0.0000	266.5028	266.5028	0.0475	8.6800e-003	270.2746
2023	1.2625	0.7925	0.9773	1.8700e-003	0.0369	0.0365	0.0734	9.9700e-003	0.0343	0.0443	0.0000	164.9194	164.9194	0.0308	3.6200e-003	166.7699
Maximum	**1.2625**	**1.4121**	**1.4612**	**3.0000e-003**	**0.1367**	**0.0660**	**0.2028**	**0.0550**	**0.0620**	**0.1169**	**0.0000**	**266.5028**	**266.5028**	**0.0475**	**8.6800e-003**	**270.2746**

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					
2022	0.1614	1.4121	1.4612	3.0000e-003	0.1367	0.0660	0.2028	0.0550	0.0620	0.1169	0.0000	266.5026	266.5026	0.0475	8.6800e-003	270.2743
2023	1.2625	0.7925	0.9773	1.8700e-003	0.0369	0.0365	0.0734	9.9700e-003	0.0343	0.0443	0.0000	164.9192	164.9192	0.0308	3.6200e-003	166.7698
Maximum	**1.2625**	**1.4121**	**1.4612**	**3.0000e-003**	**0.1367**	**0.0660**	**0.2028**	**0.0550**	**0.0620**	**0.1169**	**0.0000**	**266.5026**	**266.5026**	**0.0475**	**8.6800e-003**	**270.2743**

	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**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**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)
1	6-1-2022	8-31-2022	0.7290	0.7290
2	9-1-2022	11-30-2022	0.6225	0.6225
3	12-1-2022	2-28-2023	0.5816	0.5816
4	3-1-2023	5-31-2023	0.5040	0.5040
5	6-1-2023	8-31-2023	1.2174	1.2174
		Highest	1.2174	1.2174

Dry Creek Commons - Sonoma-North Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.4202	4.9700e-003	0.4317	2.0000e-005		2.3900e-003	2.3900e-003		2.3900e-003	2.3900e-003	0.0000	0.7053	0.7053	6.8000e-004	0.0000	0.7223
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	22.0219	22.0219	3.5600e-003	4.3000e-004	22.2397
Mobile	0.1629	0.2340	1.5210	2.8500e-003	0.2779	2.7600e-003	0.2807	0.0745	2.5800e-003	0.0771	0.0000	263.4469	263.4469	0.0189	0.0143	268.1778
Waste						0.0000	0.0000		0.0000	0.0000	5.4361	0.0000	5.4361	0.3213	0.0000	13.4677
Water						0.0000	0.0000		0.0000	0.0000	1.1989	3.0955	4.2944	0.1236	2.9700e-003	8.2699
Total	**0.5830**	**0.2389**	**1.9527**	**2.8700e-003**	**0.2779**	**5.1500e-003**	**0.2831**	**0.0745**	**4.9700e-003**	**0.0795**	**6.6350**	**289.2697**	**295.9046**	**0.4680**	**0.0177**	**312.8773**

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	0.4202	4.9700e-003	0.4317	2.0000e-005		2.3900e-003	2.3900e-003		2.3900e-003	2.3900e-003	0.0000	0.7053	0.7053	6.8000e-004	0.0000	0.7223
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	22.0219	22.0219	3.5600e-003	4.3000e-004	22.2397
Mobile	0.1629	0.2340	1.5210	2.8500e-003	0.2779	2.7600e-003	0.2807	0.0745	2.5800e-003	0.0771	0.0000	263.4469	263.4469	0.0189	0.0143	268.1778
Waste						0.0000	0.0000		0.0000	0.0000	5.4361	0.0000	5.4361	0.3213	0.0000	13.4677
Water						0.0000	0.0000		0.0000	0.0000	1.1989	3.0955	4.2944	0.1236	2.9700e-003	8.2699
Total	**0.5830**	**0.2389**	**1.9527**	**2.8700e-003**	**0.2779**	**5.1500e-003**	**0.2831**	**0.0745**	**4.9700e-003**	**0.0795**	**6.6350**	**289.2697**	**295.9046**	**0.4680**	**0.0177**	**312.8773**

	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**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/1/2022	6/7/2022	5	5	
2	Grading	Grading	6/8/2022	6/17/2022	5	8	
3	Building Construction	Building Construction	6/18/2022	5/5/2023	5	230	
4	Paving	Paving	5/6/2023	5/31/2023	5	18	
5	Architectural Coating	Architectural Coating	6/1/2023	6/26/2023	5	18	

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 8

Acres of Paving: 0.95

Residential Indoor: 148,991; Residential Outdoor: 49,664; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 2,532

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

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
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	563.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	80.00	21.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	16.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

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					0.0491	0.0000	0.0491	0.0253	0.0000	0.0253	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.9300e-003	0.0827	0.0492	1.0000e-004		4.0300e-003	4.0300e-003		3.7100e-003	3.7100e-003	0.0000	8.3599	8.3599	2.7000e-003	0.0000	8.4274
Total	**7.9300e-003**	**0.0827**	**0.0492**	**1.0000e-004**	**0.0491**	**4.0300e-003**	**0.0532**	**0.0253**	**3.7100e-003**	**0.0290**	**0.0000**	**8.3599**	**8.3599**	**2.7000e-003**	**0.0000**	**8.4274**

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	1.7000e-004	1.2000e-004	1.3500e-003	0.0000	3.5000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.2951	0.2951	1.0000e-005	1.0000e-005	0.2984
Total	**1.7000e-004**	**1.2000e-004**	**1.3500e-003**	**0.0000**	**3.5000e-004**	**0.0000**	**3.6000e-004**	**9.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.2951**	**0.2951**	**1.0000e-005**	**1.0000e-005**	**0.2984**

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					0.0491	0.0000	0.0491	0.0253	0.0000	0.0253	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.9300e-003	0.0827	0.0492	1.0000e-004		4.0300e-003	4.0300e-003		3.7100e-003	3.7100e-003	0.0000	8.3598	8.3598	2.7000e-003	0.0000	8.4274
Total	**7.9300e-003**	**0.0827**	**0.0492**	**1.0000e-004**	**0.0491**	**4.0300e-003**	**0.0532**	**0.0253**	**3.7100e-003**	**0.0290**	**0.0000**	**8.3598**	**8.3598**	**2.7000e-003**	**0.0000**	**8.4274**

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	1.7000e-004	1.2000e-004	1.3500e-003	0.0000	3.5000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.2951	0.2951	1.0000e-005	1.0000e-005	0.2984
Total	**1.7000e-004**	**1.2000e-004**	**1.3500e-003**	**0.0000**	**3.5000e-004**	**0.0000**	**3.6000e-004**	**9.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.2951**	**0.2951**	**1.0000e-005**	**1.0000e-005**	**0.2984**

3.3 Grading - 2022

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					0.0286	0.0000	0.0286	0.0137	0.0000	0.0137	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.7900e-003	0.0834	0.0611	1.2000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.4219	10.4219	3.3700e-003	0.0000	10.5062
Total	**7.7900e-003**	**0.0834**	**0.0611**	**1.2000e-004**	**0.0286**	**3.7600e-003**	**0.0323**	**0.0137**	**3.4600e-003**	**0.0172**	**0.0000**	**10.4219**	**10.4219**	**3.3700e-003**	**0.0000**	**10.5062**

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	1.3100e-003	0.0511	0.0104	1.8000e-004	4.6800e-003	4.5000e-004	5.1300e-003	1.2800e-003	4.3000e-004	1.7100e-003	0.0000	17.9450	17.9450	5.0000e-004	2.8300e-003	18.8023
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	2.3000e-004	1.7000e-004	1.8100e-003	0.0000	4.7000e-004	0.0000	4.7000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3935	0.3935	2.0000e-005	1.0000e-005	0.3979
Total	**1.5400e-003**	**0.0512**	**0.0122**	**1.8000e-004**	**5.1500e-003**	**4.5000e-004**	**5.6000e-003**	**1.4100e-003**	**4.3000e-004**	**1.8400e-003**	**0.0000**	**18.3384**	**18.3384**	**5.2000e-004**	**2.8400e-003**	**19.2001**

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					0.0286	0.0000	0.0286	0.0137	0.0000	0.0137	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.7900e-003	0.0834	0.0611	1.2000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.4219	10.4219	3.3700e-003	0.0000	10.5062
Total	**7.7900e-003**	**0.0834**	**0.0611**	**1.2000e-004**	**0.0286**	**3.7600e-003**	**0.0323**	**0.0137**	**3.4600e-003**	**0.0172**	**0.0000**	**10.4219**	**10.4219**	**3.3700e-003**	**0.0000**	**10.5062**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	1.3100e-003	0.0511	0.0104	1.8000e-004	4.6800e-003	4.5000e-004	5.1300e-003	1.2800e-003	4.3000e-004	1.7100e-003	0.0000	17.9450	17.9450	5.0000e-004	2.8300e-003	18.8023
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	2.3000e-004	1.7000e-004	1.8100e-003	0.0000	4.7000e-004	0.0000	4.7000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3935	0.3935	2.0000e-005	1.0000e-005	0.3979
Total	**1.5400e-003**	**0.0512**	**0.0122**	**1.8000e-004**	**5.1500e-003**	**4.5000e-004**	**5.6000e-003**	**1.4100e-003**	**4.3000e-004**	**1.8400e-003**	**0.0000**	**18.3384**	**18.3384**	**5.2000e-004**	**2.8400e-003**	**19.2001**

3.4 Building Construction - 2022

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	0.1194	1.0931	1.1454	1.8900e-003		0.0566	0.0566		0.0533	0.0533	0.0000	162.2077	162.2077	0.0389	0.0000	163.1792
Total	**0.1194**	**1.0931**	**1.1454**	**1.8900e-003**		**0.0566**	**0.0566**		**0.0533**	**0.0533**	**0.0000**	**162.2077**	**162.2077**	**0.0389**	**0.0000**	**163.1792**

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	3.1700e-003	0.0862	0.0234	3.1000e-004	9.5400e-003	8.7000e-004	0.0104	2.7600e-003	8.3000e-004	3.5900e-003	0.0000	30.1551	30.1551	5.8000e-004	4.5700e-003	31.5309
Worker	0.0214	0.0154	0.1685	4.0000e-004	0.0440	2.9000e-004	0.0442	0.0117	2.6000e-004	0.0120	0.0000	36.7247	36.7247	1.4200e-003	1.2500e-003	37.1324
Total	**0.0246**	**0.1016**	**0.1919**	**7.1000e-004**	**0.0535**	**1.1600e-003**	**0.0546**	**0.0145**	**1.0900e-003**	**0.0156**	**0.0000**	**66.8799**	**66.8799**	**2.0000e-003**	**5.8200e-003**	**68.6633**

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	0.1194	1.0931	1.1454	1.8900e-003		0.0566	0.0566		0.0533	0.0533	0.0000	162.2075	162.2075	0.0389	0.0000	163.1790
Total	**0.1194**	**1.0931**	**1.1454**	**1.8900e-003**		**0.0566**	**0.0566**		**0.0533**	**0.0533**	**0.0000**	**162.2075**	**162.2075**	**0.0389**	**0.0000**	**163.1790**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	3.1700e-003	0.0862	0.0234	3.1000e-004	9.5400e-003	8.7000e-004	0.0104	2.7600e-003	8.3000e-004	3.5900e-003	0.0000	30.1551	30.1551	5.8000e-004	4.5700e-003	31.5309
Worker	0.0214	0.0154	0.1685	4.0000e-004	0.0440	2.9000e-004	0.0442	0.0117	2.6000e-004	0.0120	0.0000	36.7247	36.7247	1.4200e-003	1.2500e-003	37.1324
Total	**0.0246**	**0.1016**	**0.1919**	**7.1000e-004**	**0.0535**	**1.1600e-003**	**0.0546**	**0.0145**	**1.0900e-003**	**0.0156**	**0.0000**	**66.8799**	**66.8799**	**2.0000e-003**	**5.8200e-003**	**68.6633**

3.4 Building Construction - 2023

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	0.0708	0.6473	0.7310	1.2100e-003		0.0315	0.0315		0.0296	0.0296	0.0000	104.3121	104.3121	0.0248	0.0000	104.9325
Total	**0.0708**	**0.6473**	**0.7310**	**1.2100e-003**		**0.0315**	**0.0315**		**0.0296**	**0.0296**	**0.0000**	**104.3121**	**104.3121**	**0.0248**	**0.0000**	**104.9325**

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	1.0300e-003	0.0448	0.0126	1.9000e-004	6.1300e-003	2.4000e-004	6.3700e-003	1.7700e-003	2.3000e-004	2.0000e-003	0.0000	18.6386	18.6386	3.4000e-004	2.8200e-003	19.4874
Worker	0.0127	8.7300e-003	0.0988	2.5000e-004	0.0283	1.7000e-004	0.0284	7.5200e-003	1.6000e-004	7.6800e-003	0.0000	22.8716	22.8716	8.2000e-004	7.4000e-004	23.1121
Total	**0.0138**	**0.0536**	**0.1114**	**4.4000e-004**	**0.0344**	**4.1000e-004**	**0.0348**	**9.2900e-003**	**3.9000e-004**	**9.6800e-003**	**0.0000**	**41.5102**	**41.5102**	**1.1600e-003**	**3.5600e-003**	**42.5995**

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	0.0708	0.6473	0.7310	1.2100e-003		0.0315	0.0315		0.0296	0.0296	0.0000	104.3120	104.3120	0.0248	0.0000	104.9324
Total	**0.0708**	**0.6473**	**0.7310**	**1.2100e-003**		**0.0315**	**0.0315**		**0.0296**	**0.0296**	**0.0000**	**104.3120**	**104.3120**	**0.0248**	**0.0000**	**104.9324**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	1.0300e-003	0.0448	0.0126	1.9000e-004	6.1300e-003	2.4000e-004	6.3700e-003	1.7700e-003	2.3000e-004	2.0000e-003	0.0000	18.6386	18.6386	3.4000e-004	2.8200e-003	19.4874
Worker	0.0127	8.7300e-003	0.0988	2.5000e-004	0.0283	1.7000e-004	0.0284	7.5200e-003	1.6000e-004	7.6800e-003	0.0000	22.8716	22.8716	8.2000e-004	7.4000e-004	23.1121
Total	**0.0138**	**0.0536**	**0.1114**	**4.4000e-004**	**0.0344**	**4.1000e-004**	**0.0348**	**9.2900e-003**	**3.9000e-004**	**9.6800e-003**	**0.0000**	**41.5102**	**41.5102**	**1.1600e-003**	**3.5600e-003**	**42.5995**

3.5 Paving - 2023

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	8.2600e-003	0.0791	0.1097	1.7000e-004		3.9200e-003	3.9200e-003		3.6200e-003	3.6200e-003	0.0000	14.7407	14.7407	4.6300e-003	0.0000	14.8565
Paving	1.1400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.4000e-003**	**0.0791**	**0.1097**	**1.7000e-004**		**3.9200e-003**	**3.9200e-003**		**3.6200e-003**	**3.6200e-003**	**0.0000**	**14.7407**	**14.7407**	**4.6300e-003**	**0.0000**	**14.8565**

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	6.4000e-004	4.4000e-004	4.9400e-003	1.0000e-005	1.4100e-003	1.0000e-005	1.4200e-003	3.8000e-004	1.0000e-005	3.8000e-004	0.0000	1.1436	1.1436	4.0000e-005	4.0000e-005	1.1556
Total	**6.4000e-004**	**4.4000e-004**	**4.9400e-003**	**1.0000e-005**	**1.4100e-003**	**1.0000e-005**	**1.4200e-003**	**3.8000e-004**	**1.0000e-005**	**3.8000e-004**	**0.0000**	**1.1436**	**1.1436**	**4.0000e-005**	**4.0000e-005**	**1.1556**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	8.2600e-003	0.0791	0.1097	1.7000e-004		3.9200e-003	3.9200e-003		3.6200e-003	3.6200e-003	0.0000	14.7407	14.7407	4.6300e-003	0.0000	14.8565
Paving	1.1400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.4000e-003**	**0.0791**	**0.1097**	**1.7000e-004**		**3.9200e-003**	**3.9200e-003**		**3.6200e-003**	**3.6200e-003**	**0.0000**	**14.7407**	**14.7407**	**4.6300e-003**	**0.0000**	**14.8565**

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	6.4000e-004	4.4000e-004	4.9400e-003	1.0000e-005	1.4100e-003	1.0000e-005	1.4200e-003	3.8000e-004	1.0000e-005	3.8000e-004	0.0000	1.1436	1.1436	4.0000e-005	4.0000e-005	1.1556
Total	**6.4000e-004**	**4.4000e-004**	**4.9400e-003**	**1.0000e-005**	**1.4100e-003**	**1.0000e-005**	**1.4200e-003**	**3.8000e-004**	**1.0000e-005**	**3.8000e-004**	**0.0000**	**1.1436**	**1.1436**	**4.0000e-005**	**4.0000e-005**	**1.1556**

3.6 Architectural Coating - 2023

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	1.1656					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7200e-003	0.0117	0.0163	3.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004	0.0000	2.2979	2.2979	1.4000e-004	0.0000	2.3014
Total	**1.1674**	**0.0117**	**0.0163**	**3.0000e-005**		**6.4000e-004**	**6.4000e-004**		**6.4000e-004**	**6.4000e-004**	**0.0000**	**2.2979**	**2.2979**	**1.4000e-004**	**0.0000**	**2.3014**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	5.1000e-004	3.5000e-004	3.9500e-003	1.0000e-005	1.1300e-003	1.0000e-005	1.1400e-003	3.0000e-004	1.0000e-005	3.1000e-004	0.0000	0.9149	0.9149	3.0000e-005	3.0000e-005	0.9245
Total	**5.1000e-004**	**3.5000e-004**	**3.9500e-003**	**1.0000e-005**	**1.1300e-003**	**1.0000e-005**	**1.1400e-003**	**3.0000e-004**	**1.0000e-005**	**3.1000e-004**	**0.0000**	**0.9149**	**0.9149**	**3.0000e-005**	**3.0000e-005**	**0.9245**

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	1.1656					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7200e-003	0.0117	0.0163	3.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004	0.0000	2.2979	2.2979	1.4000e-004	0.0000	2.3014
Total	**1.1674**	**0.0117**	**0.0163**	**3.0000e-005**		**6.4000e-004**	**6.4000e-004**		**6.4000e-004**	**6.4000e-004**	**0.0000**	**2.2979**	**2.2979**	**1.4000e-004**	**0.0000**	**2.3014**

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	5.1000e-004	3.5000e-004	3.9500e-003	1.0000e-005	1.1300e-003	1.0000e-005	1.1400e-003	3.0000e-004	1.0000e-005	3.1000e-004	0.0000	0.9149	0.9149	3.0000e-005	3.0000e-005	0.9245
Total	**5.1000e-004**	**3.5000e-004**	**3.9500e-003**	**1.0000e-005**	**1.1300e-003**	**1.0000e-005**	**1.1400e-003**	**3.0000e-004**	**1.0000e-005**	**3.1000e-004**	**0.0000**	**0.9149**	**0.9149**	**3.0000e-005**	**3.0000e-005**	**0.9245**

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4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	0.1629	0.2340	1.5210	2.8500e-003	0.2779	2.7600e-003	0.2807	0.0745	2.5800e-003	0.0771	0.0000	263.4469	263.4469	0.0189	0.0143	268.1778
Unmitigated	0.1629	0.2340	1.5210	2.8500e-003	0.2779	2.7600e-003	0.2807	0.0745	2.5800e-003	0.0771	0.0000	263.4469	263.4469	0.0189	0.0143	268.1778

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	263.32	263.32	263.32	755,389	755,389
City Park	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	263.32	263.32	263.32	755,389	755,389

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 Mid Rise	10.80	7.30	7.50	42.90	19.50	37.60	86	11	3
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.527833	0.059888	0.175497	0.130685	0.038148	0.009127	0.014102	0.006456	0.001101	0.000300	0.030749	0.001549	0.004565
City Park	0.527833	0.059888	0.175497	0.130685	0.038148	0.009127	0.014102	0.006456	0.001101	0.000300	0.030749	0.001549	0.004565
Other Non-Asphalt Surfaces	0.527833	0.059888	0.175497	0.130685	0.038148	0.009127	0.014102	0.006456	0.001101	0.000300	0.030749	0.001549	0.004565
Parking Lot	0.527833	0.059888	0.175497	0.130685	0.038148	0.009127	0.014102	0.006456	0.001101	0.000300	0.030749	0.001549	0.004565

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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	22.0219	22.0219	3.5600e-003	4.3000e-004	22.2397
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	22.0219	22.0219	3.5600e-003	4.3000e-004	22.2397
NaturalGas Mitigated	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
NaturalGas Unmitigated	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

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 Mid Rise	0	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
City Park	0	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
Other Non-Asphalt Surfaces	0	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
Parking Lot	0	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
Total		**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**

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 Mid Rise	0	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
City Park	0	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
Other Non-Asphalt Surfaces	0	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
Parking Lot	0	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
Total		**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**

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5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	224433	20.7654	3.3600e-003	4.1000e-004	20.9708
City Park	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	13580	1.2565	2.0000e-004	2.0000e-005	1.2689
Total		**22.0219**	**3.5600e-003**	**4.3000e-004**	**22.2397**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	224433	20.7654	3.3600e-003	4.1000e-004	20.9708
City Park	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	13580	1.2565	2.0000e-004	2.0000e-005	1.2689
Total		**22.0219**	**3.5600e-003**	**4.3000e-004**	**22.2397**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	0.4202	4.9700e-003	0.4317	2.0000e-005		2.3900e-003	2.3900e-003		2.3900e-003	2.3900e-003	0.0000	0.7053	0.7053	6.8000e-004	0.0000	0.7223
Unmitigated	0.4202	4.9700e-003	0.4317	2.0000e-005		2.3900e-003	2.3900e-003		2.3900e-003	2.3900e-003	0.0000	0.7053	0.7053	6.8000e-004	0.0000	0.7223

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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	0.1166					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2905					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	0.0131	4.9700e-003	0.4317	2.0000e-005		2.3900e-003	2.3900e-003		2.3900e-003	2.3900e-003	0.0000	0.7053	0.7053	6.8000e-004	0.0000	0.7223
Total	**0.4202**	**4.9700e-003**	**0.4317**	**2.0000e-005**		**2.3900e-003**	**2.3900e-003**		**2.3900e-003**	**2.3900e-003**	**0.0000**	**0.7053**	**0.7053**	**6.8000e-004**	**0.0000**	**0.7223**

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	0.1166					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2905					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	0.0131	4.9700e-003	0.4317	2.0000e-005		2.3900e-003	2.3900e-003		2.3900e-003	2.3900e-003	0.0000	0.7053	0.7053	6.8000e-004	0.0000	0.7223
Total	**0.4202**	**4.9700e-003**	**0.4317**	**2.0000e-005**		**2.3900e-003**	**2.3900e-003**		**2.3900e-003**	**2.3900e-003**	**0.0000**	**0.7053**	**0.7053**	**6.8000e-004**	**0.0000**	**0.7223**

7.0 Water Detail

7.1 Mitigation Measures Water

Use Water Efficient Landscaping

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	4.2944	0.1236	2.9700e-003	8.2699
Unmitigated	4.2944	0.1236	2.9700e-003	8.2699

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	3.77893 / 2.38237	3.8623	0.1236	2.9600e-003	7.8335
City Park	0 / 1.33446	0.4321	7.0000e-005	1.0000e-005	0.4364
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**4.2944**	**0.1236**	**2.9700e-003**	**8.2699**

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Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	3.77893 / 2.38237	3.8623	0.1236	2.9600e-003	7.8335
City Park	0 / 1.33446	0.4321	7.0000e-005	1.0000e-005	0.4364
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**4.2944**	**0.1236**	**2.9700e-003**	**8.2699**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	5.4361	0.3213	0.0000	13.4677
Unmitigated	5.4361	0.3213	0.0000	13.4677

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	26.68	5.4158	0.3201	0.0000	13.4174
City Park	0.1	0.0203	1.2000e-003	0.0000	0.0503
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**5.4361**	**0.3213**	**0.0000**	**13.4677**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	26.68	5.4158	0.3201	0.0000	13.4174
City Park	0.1	0.0203	1.2000e-003	0.0000	0.0503
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**5.4361**	**0.3213**	**0.0000**	**13.4677**

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