ATTACHMENT J
GREENHOUSE GAS ANALYSIS

253 SOUTH LOS ROBLES AVENUE MULTI-FAMILY PROJECT

Greenhouse Gas Emissions Technical Report

Prepared for
City of Pasadena
175 N Garfield Avenue
Pasadena, CA 91101

August 2018

ESA

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Acronyms and Abbreviations

AB 32	California Global Warming Solutions Act of 2006
Basin	South Coast Air Basin
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CALGreen Code	California Green Building Standards Code
CAFE	Corporate Average Fuel Economy
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officer's Association
CARB	California Air Resources Board
CBSC	California Building Standards Commission
CCAT	California Climate Action Team
CEC	California Energy Commission
CEUS	Commercial End-Use Survey
CH_4	Methane
City	City of Pasadena
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalents
CPUC	California Public Utilities Commission
DPM	Diesel Particulate Matter
GHG	Greenhouse Gas
GWP	Global Warming Potential
HFCs	Hydrofluorocarbons
HVAC	Heating, Ventilating and Air Conditioning
IPCC	Intergovernmental Panel on Climate Change
LCFS	Low Carbon Fuel Standard
$MTCO_2e$	Metric ton of carbon dioxide equivalent
$MMTCO_2e$	Million metric tons of carbon dioxide equivalent
NAT	No-Action-Taken
N_2O	Nitrous Oxide
PFCs	Perfluorocarbons
RPS	Renewable Portfolio Standard
SF_6	Sulfur Hexafluoride
OPR	California Office of Planning and Research

USGBC	United States Green Building Code
VMT	Vehicle miles travelled
EMFAC	on-road vehicle emissions factor model
Hp	horsepower
LOS	Level of Service
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
ppm	parts per million
RTIP	Regional Transportation Improvement Program
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SIP	State Implementation Plan
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency

EXECUTIVE SUMMARY

Zhuang & Zhong Los Robles, LLC (the Applicant) proposes to develop the Los Robles Condominiums (Project) a residential development containing 92 condominium units, located at 253 South Los Robles Avenue in the City of Pasadena (City). The Project Site is an approximately 0.815 acre (35,501 square-foot [SF]) rectangular site (Project Site) located on the west side of Los Robles Avenue, south of Cordova Street. This Technical Report provides an estimate of greenhouse gas (GHG) emissions for the Project and the potential impacts from associated construction and operational activities. The report includes the categories and types of emission sources resulting from the Project, the calculation procedures used in the analysis, and any assumptions or limitations.

The Project would consist of a 94,165 SF, six-story, residential building. Overall, the Project would consist 92 condominium units, a 1,699 SF gym, 22,320 SF of open space, including a 6th Floor Terrace and Sundeck, and a 68,668 SF three-level subterranean parking garage. The Project includes demolition of all existing on-site buildings and features, excavation to accommodate the subterranean parking levels, and the construction of the new residential building.

This Greenhouse Gas Emissions Technical Report provides an estimate of GHG emissions for the proposed project and predicts the potential impacts from construction and operation activities. The report includes the categories and types of emission sources resulting from the Project, the calculation procedures used in the analysis, and any assumptions or limitations. The Project would introduce short-term and temporary GHG emissions from construction and long-term GHG emissions from operation. The following emission sources, associated with the Project, have been evaluated:

- *Construction* – Activities associated with construction of the Project, such as combustion of fossil fuels for demolition, grading, building erection, paving and painting, would result in temporary and incremental increases in GHG emissions.

- *Operation* – Operation of the Project would cause the emission of GHGs from activities such as heating, cooling, and electricity, lawn care and maintenance activities, the treatment and conveyance of water; and combustion of fossil fuels for transportation and power. However, the Project would implement Project Design Features that would be consistent with State and City recommended GHG reduction strategies and are predicted to lessen emissions of GHGs.

This report summarizes the potential for the Project to generate GHG emissions evaluates the Project's consistency with the City of Pasadena's Climate Action Plan. The findings of the analyses are as follows:

- The Project will be designed to meet the California Green Building Standards (CALGreen) Code, as adopted and amended by the City of Pasadena, through the incorporation of green building techniques and other sustainability features, including those within the City of Pasadena Green Building Code, where applicable and greenhouse gas emissions associated with the Project would be consistent with the applicable portions of the City of Pasadena's qualified Climate Action Plan. Thus, the Project's GHG emissions would be consistent with regulatory schemes intended to reduce GHG emissions.

- The Project would be consistent with local regulations for reducing GHG emissions in accordance with the City of Pasadena's qualified Climate Action Plan. Therefore, as the Project would be consistent with applicable plans, policies and regulations adopted for the purpose of reducing GHG emissions.

- Furthermore, the Project would implement green building measures that would reduce the Project's direct and indirect GHG emissions.

1.0
Introduction

ESA has conducted a greenhouse gas emissions assessment to evaluate the potential greenhouse gas emissions impacts associated with construction activities, mobile sources, building energy demand, and other aspects of Project construction and operations that have the potential to generate greenhouse gas emissions. The objectives of this Greenhouse Gas Emissions Technical Report are to:

- Evaluate the construction and operational greenhouse gas emissions associated with Project development;
- Evaluate the Project's consistency with the City of Pasadena's Climate Action Plan;

1.1 Existing Conditions

Zhuang & Zhong Los Robles, LLC (the Applicant) proposes to develop the Los Robles Condominiums (Project) located at 253 South Los Robles in the City of Pasadena (City). The Project Site is an approximately 0.815 acre (35,501 SF) rectangular-shaped site (Project Site) located on the west side of Los Robles Avenue, south of Cordova Street. The Project Site is also located near public transportation options including bus stops approximately 50 feet east of the Project Site at the intersection of South Los Robles Ave/Cordova Street, 220 feet northeast of the Project site along Cordova Street, and 310 feet north of the Project Site along South Los Robles Ave, and the Metro Gold Line Del Mar Station approximately 0.35 miles west of the Project Site. The Project Site is shown in **Figure 1**, *Vicinity Location Map.* The Project Site abuts a mix of residential uses, commercial uses and a school.

The Project Site is currently developed with an office building totaling 43,544 SF that is currently vacant and a 9,160 SF parking lot. **Figure 2**, *Aerial Photograph of Project Site and Vicinity*, shows the Project Site and surrounding land uses.

D170931.00 - 253 South Los Robles Avenue Multi-Family Project\05 Graphics-GIS-Modeling\Illustrator

SOURCE: Google Earth Pro, basemap, 2018; ESA, 2018

253 S Los Robles Avenue Project

Figure 1
Vicinity Location Map

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SOURCE: Google Earth Pro, basemap, 2018; ESA, 2018

253 S Los Robles Avenue Project

Figure 2
Aerial Photograph of Project Site and Vicinity

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1.2 Project Description

The Project would consist of a 94,165 SF, six-story, residential building, which includes a 1,699 SF gym, 22,320 SF of open space including a 6th Floor Terrace and Sundeck. Parking would be provided in a three-level subterranean parking garage with 131 spaces and totaling 69,668 SF. Project construction would include the demolition of current structures, grading to prepare the Site for new development, excavation to accommodate the subterranean parking and basement levels, and the construction, architectural coating, and paving of the commercial building.

The Project site is located in the CD-2 (Central District Specific Plan) zoning district in the City of Pasadena and is currently developed with one vacant office building. An Affordable Housing Concession Permit for floor area and building height are necessary to achieve the density bonus. In addition, a vesting Tentative Tract Map for condominium purposes and Design Review approval are required.

1.3 Existing Site Emissions

The Project Site is currently developed with an office building totaling 43,544 SF that is currently vacant and a 9,160 SF parking lot. While the site operated as an occupied office building for many years, to be conservative, this analysis considers all Project-related emissions as new emissions.

1.4 Existing Greenhouse Gas Environment

1.4.1 Greenhouse Gases

Global climate change refers to changes in average climatic conditions on Earth as a whole, including changes in temperature, wind patterns, precipitation and storms. Historical records indicate that global climate changes have occurred in the past due to natural phenomena; however, current data increasingly indicate that the current global conditions differ from past climate changes in rate and magnitude. Global climate change attributable to anthropogenic (human) GHG emissions is currently one of the most important and widely debated scientific, economic and political issues in the United States and the world. The extent to which increased concentrations of GHGs have caused or will cause climate change and the appropriate actions to limit and/or respond to climate change are the subject of significant and rapidly evolving regulatory efforts at the federal and state levels of government.

GHGs are compounds in the Earth's atmosphere which play a critical role in determining temperature near the Earth's surface. More specifically, these gases allow high-frequency shortwave solar radiation to enter the Earth's atmosphere, but retain some of the low frequency infrared energy which is radiated back from the Earth towards space, resulting in a warming of the atmosphere. Not all GHGs possess the same ability to induce climate change; as a result, GHG contributions are commonly quantified in the units of equivalent mass of carbon dioxide (CO_2e). Mass emissions are calculated by converting pollutant specific emissions to CO_2e

emissions by applying the proper global warming potential (GWP) value.[1] GWP is the measure of the amount of energy one ton of a gas will absorb over a given period of time, relative to the emissions of one ton of carbon dioxide (CO_2). The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that time period. These GWP ratios are provided by the Intergovernmental Panel on Climate Change (IPCC) in its Fourth Assessment Report (AR4).[2] By applying the GWP ratios, project-related CO_2e emissions can be tabulated in metric tons per year. Typically, the GWP ratio corresponding to the warming potential of CO_2 over a 100-year period is used as a reference point for GHG emissions. The CO_2e values are calculated for construction years as well as existing and project build-out conditions in order to generate a net change in GHG emissions for construction and operation. Compounds that are regulated as GHGs are discussed below.

- **Carbon Dioxide (CO_2):** CO_2 is the most abundant anthropogenic GHG in the atmosphere and is primarily generated from fossil fuel combustion from stationary and mobile sources. CO_2 is the reference gas (GWP of 1) for determining the GWPs of other GHGs.

- **Methane (CH_4):** CH_4 is emitted from biogenic sources (i.e., resulting from the activity of living organisms), incomplete combustion in forest fires, anaerobic decomposition of organic matter in landfills, manure management, and leaks in natural gas pipelines. The GWP of CH_4 is 21 in the IPCC SAR and 25 in the IPCC AR4.

- **Nitrous Oxide (N_2O):** N_2O produced by human-related sources including agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. The GWP of N_2O is 310 in the IPCC SAR and 298 in the IPCC AR4.

- **Hydrofluorocarbons (HFCs):** HFCs are fluorinated compounds consisting of hydrogen, carbon, and fluorine. They are typically used as refrigerants in both stationary refrigeration and mobile air conditioning systems. The GWPs of HFCs range from 140 for HFC-152a to 11,700 for HFC-23 in the IPCC SAR and 124 for HFC-152a to 14,800 for HFC-23 in the IPCC AR4.

- **Perfluorocarbons (PFCs):** PFCs are fluorinated compounds consisting of carbon and fluorine. They are primarily created as a byproduct of aluminum production and semiconductor manufacturing. The GWPs of PFCs range from 6,500 to 9,200 in the IPCC SAR and 7,390 to 17,700 in the IPCC AR4.

- **Sulfur Hexafluoride (SF_6):** SF_6 is a fluorinated compound consisting of sulfur and fluoride. It is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. SF_6 has a GWP of 23,900 in the IPCC SAR and 22,800 in the IPCC AR4.

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1 GWPs and associated CO_2e values were developed by the Intergovernmental Panel on Climate Change (IPCC), and published in its Second Assessment Report (SAR) in, 1996. Historically, GHG emission inventories have been calculated using the GWPs from the IPCC's SAR. The IPCC updated the GWP values based on the latest science in its Fourth Assessment Report (AR4). The California Air Resources Board (CARB) has begun reporting GHG emission inventories for California using the GWP values from the IPCC AR4.

2 Intergovernmental Panel on Climate Change, Fourth Assessment Report, The Physical Science Basis, Table 2.14, (2007). Available: https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html. Accessed January 2018.

1.4.2 Existing Conditions

Greenhouse Gas Emissions Inventory

The California Air Resources Board (CARB) compiles GHG inventories for the State of California. Based on the 2016 GHG inventory data (i.e., the latest year for which data are available from CARB) prepared by CARB in 2018, California emitted 429.4 million metric tons of CO_2e ($MMTCO_2e$) including emissions resulting from imported electrical power.[3] Between 1990 and 2016, the population of California grew by approximately 9.5 million (from 29.8 to 39.3 million).[4] This represents an increase of approximately 32 percent from 1990 population levels. In addition, the California economy, measured as gross state product, grew from $773 billion in 1990 to $2.62 trillion in 2016 representing an increase of approximately 239 percent (over three times the 1990 gross state product).[5] Despite the population and economic growth, California's net GHG emissions have been reduced to below 1990 levels. According to CARB, the declining trend coupled with the state's GHG reduction programs (such as the Renewables Portfolio Standard, Low Carbon Fuel Standard, vehicle efficiency standards, and declining caps under the Cap and Trade Program) demonstrate that California is on track to meet the 2020 GHG reduction target codified in California Health and Safety Code (HSC), Division 25.5, also known as The Global Warming Solutions Act of 2006 (AB 32).[6] **Table 1**, *State of California Greenhouse Gas Emissions,* identifies and quantifies statewide anthropogenic GHG emissions and sinks (e.g., carbon sequestration due to forest growth) in 1990 and 2016. As shown in **Table 1**, the transportation sector is the largest contributor to statewide GHG emissions at approximately 39 percent in 2016.

1.4.3 Effects of Global Climate Change

The scientific community's understanding of the fundamental processes responsible for global climate change has improved over the past decade, and its predictive capabilities are advancing. However, there remain significant scientific uncertainties in, for example, predictions of local effects of climate change, occurrence, frequency, and magnitude of extreme weather events, effects of aerosols, changes in clouds, shifts in the intensity and distribution of precipitation, and changes in oceanic circulation. Due to the complexity of the Earth's climate system and inability

3 California Air Resources Board, California Greenhouse Gas Inventory for 2000-2016– by Category as Defined in the 2008 Scoping Plan. Available at: https://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_sum_2000-16.pdf. Accessed July 2018.

4 U.S. Census Bureau, Data Finders, http://www.census.gov/. 2009; California Department of Finance, E-5 Population and Housing Estimates for Cities, Counties and the State. State of California Department of Finance, American Community Survey, 2014. Available at: http://www.dof.ca.gov/Reports/Demographic_Reports/American_Community_Survey/documents/Web_ACS2016_Pop-Race.xlsx. Accessed July 2018.

5 California Department of Finance, Gross State Product. Available at: http://www.dof.ca.gov/Forecasting/Economics/Indicators/Gross_State_Product/. Accessed July 2018. Amounts are based on current dollars as of the date of the report (May 2018).

6 California Air Resources Board, Frequently Asked Questions for the 2016 Edition California Greenhouse Gas Emission Inventory, (2016). Available at: https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2014/ghg_inventory_faq_20160617.pdf. Accessed January 2018.

to accurately model it, the uncertainty surrounding climate change may never be completely eliminated. Nonetheless, the IPCC's *Fifth Assessment Report, Summary for Policy Makers* states that, "it is *extremely likely* that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in greenhouse gas concentrations and other anthropogenic forc[es [*sic*] together."[7] A report from the National Academy of Sciences concluded that 97 to 98 percent of the climate researchers most actively publishing in the field support the tenets of the IPCC in that climate change is very likely caused by human (i.e., anthropogenic) activity.[8]

TABLE 1
STATE OF CALIFORNIA GREENHOUSE GAS EMISSIONS

Category	Total 1990 Emissions using IPCC SAR ($MMTCO_2e$)	Percent of Total 1990 Emissions	Total 2016 Emissions using IPCC AR4 ($MMTCO_2e$)	Percent of Total 2016 Emissions
Transportation	150.7	35%	169.4	39%
Electric Power	110.6	26%	68.6	16%
Commercial	14.4	3%	15.2	4%
Residential	29.7	7%	24.2	6%
Industrial	103.0	24%	89.6	21%
Recycling and Waste [a]	–	–	8.8	2%
High GWP/Non-Specified [b]	1.3	<1%	19.8	5%
Agriculture/Forestry	23.6	6%	33.8	8%
Forestry Sinks	-6.7		-- [c]	--
Net Total (IPCC SAR)	**426.6**	**100%**	--	--
Net Total (IPCC AR4) [d]	**431**	**100%**	**429.4**	**100%**

[a] Included in other categories for the 1990 emissions inventory.

[b] High GWP gases include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6). High GWP gases are not specifically called out in the 1990 emissions inventory.

[c] Revised methodology under development (not reported for 2016).

[d] CARB revised the State's 1990 level GHG emissions using GWPs from the IPCC AR4. Percent totals may not add up exactly due to rounding.

Sources: California Air Resources Board, Staff Report – California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit, (2007); California Air Resources Board, California Greenhouse Gas Inventory for 2000-2016– by Category as Defined in the 2008 Scoping Plan. Available at: https://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_sum_2000-16.pdf. Accessed July 2018.

According to CARB, the potential impacts in California due to global climate change may include: loss in snow pack; sea level rise; more extreme heat days per year; more high ozone days; more large forest fires; more drought years; increased erosion of California's coastlines and sea water intrusion into the Sacramento and San Joaquin Deltas and associated levee systems; and

7 Intergovernmental Panel on Climate Change, Fifth Assessment Report, Summary for Policy Makers, (2013) 15. Available: http://ipcc.ch/report/ar5/syr/. Accessed January 2018.

8 Anderegg, William R. L., J.W. Prall, J. Harold, S.H., Schneider, Expert Credibility in Climate Change, Proceedings of the National Academy of Sciences of the United States of America. 2010;107:12107-12109.

increased pest infestation.[9] Below is a summary of some of the potential effects that could be experienced in California as a result of global warming and climate change.

Air Quality and Wildfire

Higher temperatures, conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect and, therefore, its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would exacerbate air quality. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state.[10] However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thus ameliorating the pollution associated with wildfires.

In 2009, the California Natural Resources Agency (CNRA) published the *California Climate Adaptation Strategy* as a response to the Governor's Executive Order S-13-2008.[11] The CNRA report lists specific recommendations for state and local agencies to best adapt to the anticipated risks posed by a changing climate. In accordance with the *California Climate Adaptation Strategy*, the CEC was directed to develop a website on climate change scenarios and impacts that would be beneficial for local decision makers.[12] The website, known as Cal-Adapt, became operational in 2011.[13] The information provided on the Cal-Adapt website represents a projection of potential future climate scenarios. The data are comprised of the average values (i.e., temperature, sea-level rise, snowpack) from a variety of scenarios and models and are meant to illustrate how the climate may change based on a variety of different potential social and economic factors. According to the Cal-Adapt website, the portion of the City in which the Project Site is located could result in an average increase in temperature of approximately 8 to 11 percent (about 5.9 to 8.7°F) by 2070–2099, compared to the 1961–1990 period.[14]

Water Supply

Uncertainty remains with respect to the overall impact of global climate change on future water supplies in California. Studies have found that, "Considerable uncertainty about precise impacts

9 California Environmental Protection Agency, Climate Action Team, Climate Action Team Report to Governor Schwarzenegger and the Legislature, (2006). Available at: http://climatechange.ca.gov/climate_action_team/reports/2006report/2006-04-03_FINAL_CAT_REPORT.PDF. Accessed January 2018.

10 California Environmental Protection Agency, *Preparing California for Extreme Heat: Guidance and Recommendations*, October 2013. https://toolkit.climate.gov/reports/preparing-california-extreme-heat-guidance-and-recommendations. January 2018.

11 California Natural Resources Agency, Climate Action Team, 2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008, 2009.

12 California Natural Resources Agency, Climate Action Team, 2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008, 2009.

13 The Cal-Adapt website address is: http://cal-adapt.org.

14 California Energy Commission. Cal-Adapt: Annual Averages, 2018, http://cal-adapt.org/tools/annual-averages/#climatevar=tasmax&scenario=rcp85&lat=34.15625&lng=-118.15625&boundary=locagrid&units=fahrenheit. Accessed July 2018.

of climate change on California hydrology and water resources will remain until we have more precise and consistent information about how precipitation patterns, timing, and intensity will change."[15] For example, some studies identify little change in total annual precipitation in projections for California while others show significantly more precipitation.[16] Warmer, wetter winters would increase the amount of runoff available for groundwater recharge; however, this additional runoff would occur at a time when some basins are either being recharged at their maximum capacity or are already full. Conversely, reductions in spring runoff and higher evapotranspiration because of higher temperatures could reduce the amount of water available for recharge.[17]

The California Department of Water Resources report on climate change and effects on the State Water Project (SWP), the Central Valley Project, and the Sacramento-San Joaquin Delta, concludes that "climate change will likely have a significant effect on California's future water resources…[and] future water demand." It also reports that "much uncertainty about future water demand [remains], especially [for] those aspects of future demand that will be directly affected by climate change and warming. While climate change is expected to continue through at least the end of this century, the magnitude and, in some cases, the nature of future changes is uncertain." It also reports that the relationship between climate change and its potential effect on water demand is not well understood, but "[i]t is unlikely that this level of uncertainty will diminish significantly in the foreseeable future." Still, changes in water supply are expected to occur, and many regional studies have shown that large changes in the reliability of water yields from reservoirs could result from only small changes in inflows.[18] In its *Fifth Assessment Report*, the IPCC states "Changes in the global water cycle in response to the warming over the 21st century will not be uniform. The contrast in precipitation between wet and dry regions and between wet and dry seasons will increase, although there may be regional exceptions."[19]

Hydrology and Sea Level Rise

As discussed above, climate changes could potentially affect: the amount of snowfall, rainfall and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. Sea level rise can be a product of global warming through two main processes: expansion of seawater as the oceans warm, and melting of

15 Pacific Institute for Studies in Development, Environment and Security, Climate Change and California Water Resources: A Survey and Summary of the Literature, July 2003, http://www.pacinst.org/reports/climate_change_and_california_water_resources.pdf. Accessed January 2018.

16 Pacific Institute for Studies in Development, Environment and Security, Climate Change and California Water Resources: A Survey and Summary of the Literature, July 2003, http://www.pacinst.org/reports/climate_change_and_california_water_resources.pdf. Accessed January 2018.

17 CNRA, 2014. Safeguarding California: Reducing Climate Risk, an Update to the 2009 California Climate Adaptation Strategy. (2014). Accessed January 2018.

18 California Department of Water Resources Climate Change Report, Progress on Incorporating Climate Change into Planning and Management of California's Water Resources, July 2006. Available at http://baydeltaoffice.water.ca.gov/climatechange/DWRClimateChangeJuly06_update8-2-07.pdf. Accessed January 2018.

19 Intergovernmental Panel on Climate Change, Fifth Assessment Report, Summary for Policy Makers, (2013), page 20.

ice over land. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture

California has a $30 billion agricultural industry that produces half the country's fruits and vegetables. Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater ozone pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thus affect their quality.[20]

Ecosystems

Increases in global temperatures and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. Increasing concentrations of GHGs are likely to accelerate the rate of climate change. Scientists expect that the average global surface temperature could rise by 2-11.5°F (1.1-6.4°C) by 2100, with significant regional variation.[21] Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Sea level could rise as much as 2 feet along most of the United States coastline. Rising temperatures could have four major impacts on plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes such as carbon cycling and storage.[22]

20 California Climate Change Center, Our Changing Climate: Assessing the Risks to California, 2006, http://meteora.ucsd.edu/cap/pdffiles/CA_climate_Scenarios.pdf. Accessed January 2018.

21 National Research Council, Advancing the Science of Climate Change, (2010). Available at: http://dels.nas.edu/resources/static-assets/materials-based-on-reports/reports-in-brief/Science-Report-Brief-final.pdf. Accessed January 2018.

22 Parmesan, C., and H. Galbraith, Observed Impacts of Global Climate Change in the U.S., Prepared for the Pew Center on Global Climate Change, December 2004, https://www.c2es.org/docUploads/final_ObsImpact.pdf. Accessed January 2018.

2.0
Regulatory Setting

2.1 City of Pasadena Green Building Standards

In acknowledgment that land use and GHG emissions are interrelated, the City of Pasadena incorporated the CALGreen Code, with amendments in Chapter 14.04.500 et seq. in its Municipal Code. The City's ordinance requires applicable projects to comply with specified provisions to reduce energy consumption such as the use of low slope cool roofs and exceeding energy efficiency targets beyond regulatory requirements. The City's Municipal Code requires applicable projects to comply with specified provisions to reduce energy consumption. The ordinance added Section 307.1 to the CALGreen Standards Code, which states that buildings required to comply with Tier 1 requirements include mixed use and multi-family residential buildings four stories in height or more (Section 14.04.504). This would apply to the Project as it is a multi-family residential building four stories in height or more.

2.2 City of Pasadena Climate Action Plan

The purpose of the Pasadena Climate Action Plan (CAP) is to analyze GHG emissions at a programmatic-level, outline a strategy to reduce and mitigate municipal and community-wide GHG emissions. In addition, the Pasadena CAP serves as a qualified GHG reduction plan and demonstrates Pasadena's commitment to achieving the state-wide emissions reduction targets as it is consistent with the California Environmental Quality Act (CEQA) Guidelines Section 15183.5. The timeframe for the Pasadena CAP extends from the date of adoption in 2018 through the year 2035, and includes Pasadena's overall GHG reduction strategy that consists of GHG emission reductions goals, strategies, and measures.[23] The Pasadena CAP establishes the following community-wide GHG emissions reduction goals:

- Reduce community-wide GHG emissions 27 percent below 2009 levels by 2020.
- Reduce community-wide GHG emissions 49 percent below 2009 levels by 2030.
- Reduce community-wide GHG emissions 59 percent below 2009 levels by 2035.
- Reduce community-wide GHG emissions 83 percent below 2009 levels by 2050.

The Pasadena CAP establishes the following GHG emission reduction strategies that relevant to the proposed Project:

[23] City of Pasadena, Pasadena Climate Action Plan, March 5, 2018, https://ww5.cityofpasadena.net/planning/planning-division/community-planning/pasadena-climate-action-plan/. Accessed July 2018.

Strategy 1: Sustainable Mobility and Land Use: Create an interconnected transportation system and land use pattern that shifts travel from personal automobile to walking, biking, and public transit by improving pedestrian and bicycle infrastructure, enhancing carpooling and public transit services, supporting pedestrian and transit-oriented development, expanding the use of electric vehicles and related infrastructure, and improving the City's vehicle fleet.

Measure T-1 Walking and Bicycling.

T-1.1 Continue to expand Pasadena's bicycle and pedestrian network.

T-1.3 Continue to encourage bicycle and pedestrian travel.

Measure T-3 Transportation Demand Management.

T-3.1 Decrease annual commuter miles traveled by single-occupancy vehicles.

Measure T-4 Alternative Fuel Vehicles.

T-4.1 Expand the availability and use of alternative fuel vehicles and fueling infrastructure.

Measure T-5 Transit-Oriented Development.

T-5.1 Facilitate high-density, mixed-use, transit-oriented and infill development.

Measure T-7 Lawn and Garden Equipment.

T-7.1 Reduce GHG emissions from lawn and garden equipment.

Strategy 2: Energy Efficiency and Conservation: Minimize the City's energy consumption by creating high performance buildings, and transitioning to carbon neutral sources by enhancing energy performance requirements for new construction and energy efficiency retrofits for existing buildings, increasing use of carbon-neutral and renewable energy, and improving community energy management.

Measure E-1 Building Performance Standards for New Construction.

E-1.1 Increase energy efficiency requirements of new buildings to perform better than 2016 Title 24 Standards.

Strategy 3: Water Conservation: Promote water conservation and efficiency in both indoor and outdoor uses by increasing access to and use of recycled water and improving storm water infiltration.

Measure WC-1 Potable Water.

WC-1.1 Reduce potable water usage throughout Pasadena.

Strategy 4: Solid Waste Reduction: Minimize the City's waste by improving waste management and promoting reuse, recycling, and composting.

Measure WR-1 Solid Waste.

WR-1.1 Continue to reduce solid waste and landfill GHG emissions.

Measure WR-2 Reuse and Recycling.

WR-2.1 Establish a "Preferred Procurement Plan" for sustainable, strategic sourcing for all City departments and facilities.

WR-2.2 Create an internal program for all City departments to recirculate unwanted goods.

Measure WR-4 Waste Collection System.

WR-4.1 Reduce the GHG impacts of the waste collection system.

Strategy 5: Urban Greening: Maintain a healthy urban forest by preserving greenspace and increasing the number of trees in Pasadena.

Measure UG-1 Greenspace.

UG-1.1 Continue to preserve, enhance, and acquire additional greenspace throughout Pasadena to improve carbon sequestration, reduce the urban heat-island effect, and increase opportunities for active recreation.

Measure UG-2 Urban Forest.

UG-2.1 Continue to protect existing trees and plant new ones to improve and ensure viability of Pasadena's urban forest.

2.3 Appendix D - Climate Action Plan Consistency Checklist

In addition, the Pasadena CAP includes Appendix D - Climate Action Plan Consistency Checklist as a is tool for new development projects to demonstrate consistency with Pasadena's CAP, which is a qualified greenhouse gas (GHG) emissions reduction plan in accordance with California Environmental Quality Act (CEQA) Guidelines Section 15183.5.[24] The Climate Action Plan Consistency Checklist was developed as part of the CAP implementation and monitoring process and will support the achievement of individual CAP measures as well as Pasadena's overall GHG reduction goals.

The Climate Action Plan Consistency Checklist reflects Pasadena's goals and policies regarding sustainable development and aim to conserve and reduce the consumption of resources, such as energy and water, among others. CEQA Guidelines Section 15183.5 allows lead agencies to analyze the impacts associated with GHG emissions at a programmatic level in plan-level documents such as CAPs, so that project-level environmental documents may tier from the programmatic review. Projects that meet the requirements of the Climate Action Plan Consistency Checklist will be deemed to be consistent with Pasadena's CAP and will be found to have a less than significant contribution to cumulative GHG (i.e., the project's incremental contribution to cumulative GHG effects is not cumulatively considerable), pursuant to CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b).

The Climate Action Plan Consistency Checklist is required for discretionary projects that are subject to and CEQA. Projects that are exempt from CEQA are deemed to be consistent with Pasadena's CAP, and no further review is necessary, with the exception of the Class 32 "In-Fill Development Projects" categorical exemption (CEQA Guidelines Section 15332), for which Projects are required to demonstrate consistency with the CAP through the Climate Action Plan Consistency Checklist.

[24] City of Pasadena, Pasadena Climate Action Plan: Appendix D - climate action plan consistency checklist, March 5, 2018, https://ww5.cityofpasadena.net/planning/wp-content/uploads/sites/56/2017/12/D-CAP-Consistency-Checklist.pdf. Accessed July 2018.

The Climate Action Plan Consistency Checklist presents three options in which projects can demonstrate consistency with Pasadena's CAP. Option B is described below.

2.4 Climate Action Plan Consistency Checklist – Step 3: Option B: GHG Efficiency - Demonstrate that the proposed project is consistent with Pasadena's per person GHG efficiency thresholds

Option B: the GHG Efficiency threshold assesses the GHG efficiency of a proposed project on a service person (residents plus full time employees) basis.[25] The City of Pasadena has developed per service person efficiency thresholds for the years of 2020, 2025, 2030 and 2035 using the demographic projections developed for the CAP that are consistent with Pasadena's GHG emission goals included in the CAP and the State targets it is designed to achieve (Assembly Bill 32, Senate Bill 32, and progress towards Executive Order S-3-05).

To utilize Option B to demonstrate consistency with the CAP, proposed projects must be able to demonstrate a GHG efficiency which is less than or equal to the per service person efficiency threshold for the projects first operational year.

While the Project is schedule to be completed in the third quarter of 2020, this analysis will conservatively compare the GHG emission efficiency of the Project to the per service person efficiency threshold assuming first full buildout year of 2021. For projects with first operational year between 2021 to 2025, the GHG efficiency threshold is 4.56 $MTCO_2e$/Service Person in a year.[26]

[25] City of Pasadena, Pasadena Climate Action Plan: Appendix D - climate action plan consistency checklist, March 5, 2018, https://ww5.cityofpasadena.net/planning/wp-content/uploads/sites/56/2017/12/D-CAP-Consistency-Checklist.pdf. Accessed July 2018.

[26] City of Pasadena, Pasadena Climate Action Plan: Appendix D - climate action plan consistency checklist, March 5, 2018, https://ww5.cityofpasadena.net/planning/wp-content/uploads/sites/56/2017/12/D-CAP-Consistency-Checklist.pdf. Accessed July 2018.

3.0
Methodology

The evaluation of potential impacts to GHG emissions that may result from the construction and long-term operations of the Project is conducted as follows. Detailed modeling calculations and supporting files are provided in **Appendix A** and **B** of this Technical Report.

3.1 Greenhouse Gas Emissions Estimates

The Climate Registry General Reporting Protocol provides procedures and guidelines for calculating and reporting GHG emissions from general and industry-specific activities.[27] Although the Climate Registry General Reporting Protocol does not establish numerical thresholds of significance, and there are no specific protocols available for land use development projects, such as the proposed Project, the General Reporting Protocol provides a framework for calculating and reporting GHG emissions from sources of GHG associated with the proposed Project, such as energy and transportation emissions. The GHG emissions quantification provided in this report is consistent with the General Reporting Protocol framework. The framework of the General Reporting Protocol recommends separating GHG emissions into three categories that reflect different aspects of ownership or control over emissions. They include the following:

- Scope 1: Direct, on-site combustion of fossil fuels (e.g., natural gas, propane, gasoline, and diesel).
- Scope 2: Indirect, off-site emissions associated with purchased electricity or purchased steam.
- Scope 3: Indirect emissions associated with other emissions sources, such as third-party vehicles and embodied energy.[28]

CARB believes that consideration of so-called indirect emissions provides a more complete picture of the GHG footprint of a facility: "As facilities consider changes that would affect their emissions – addition of a cogeneration unit to boost overall efficiency even as it increases direct emissions, for example – the relative impact on total (direct plus indirect) emissions by the facility should be monitored. Annually reported indirect energy usage also aids the conservation awareness of the facility and provides information" to CARB to be considered for future strategies by the industrial sector. For these reasons, CARB has proposed requiring the calculation of direct and indirect GHG emissions as part of the HSC Division 25.5 reporting requirements. Additionally, the Office of Planning and Research directs lead agencies to "make a

27 The Climate Registry. General Reporting Protocol Version 2.1, January 2016. Available at: https://www.theclimateregistry.org/tools-resources/reporting-protocols/general-reporting-protocol/

28 Embodied energy includes energy required for water pumping and treatment for end-uses. Third-party vehicles include vehicles used visitors of the Project Site.

good-faith effort, based on available information, to calculate, model, or estimate…GHG emissions from a project, including the emissions associated with vehicular traffic, energy consumption, water usage and construction activities." Therefore, direct and indirect emissions have been calculated for the Project.

For purposes of this analysis, it is considered reasonable and consistent with criteria pollutant calculations to consider those GHG emissions resulting from Project-related incremental (net) increase in the use of on-road mobile vehicles, electricity, and natural gas compared to existing conditions. This includes Project construction activities such as demolition, hauling, and construction worker trips. This analysis also considers indirect GHG emissions from water conveyance, wastewater generation, and solid waste handling. Since potential impacts resulting from GHG emissions are long-term rather than acute, GHG emissions are calculated on an annual basis.

The General Reporting Protocol provides a range of basic calculation methods. However, the calculation methods are typically designed for existing buildings or facilities and are not directly applicable to planning and development situations where the buildings or facilities do not yet exist. As a result, this section relies on calculation guidance from state and regional agencies with scientific expertise in quantifying GHG emissions, such as CARB and the SCAQMD. GHG emissions are estimated using the California Emissions Estimator Model (CalEEMod), which is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions from a variety of land use projects. CalEEMod was developed in collaboration with the air districts of California. Regional data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) have been provided by the various California air districts to account for local requirements and conditions. The model is considered to be an accurate and comprehensive tool for quantifying air quality and GHG impacts from land use projects throughout California.[29]

The CAPCOA has provided guidance on mitigating or reducing GHG emissions from land use development projects. In September 2010, CAPCOA released a guidance document titled *Quantifying Greenhouse Gas Mitigation Measures* which provides GHG reduction values for recommended mitigation measures.[30] The CAPCOA guidance document was utilized in this analysis for quantifying reductions from physical and operational Project characteristics and Project Design Features in CalEEMod.

3.2 Construction Emissions

Construction of the proposed Project has the potential to generate GHG emissions through the use of heavy-duty construction equipment and through vehicle trips generated from construction workers traveling to and from the Project site. Construction emissions can vary from day to day, depending on the level of activity, the specific type of operation, and the prevailing weather conditions. The number and types of construction equipment, vendor trips (e.g., transport of

29 See: http://www.aqmd.gov/caleemod/.

30 California Air Pollution Control Officers Association, Quantifying Greenhouse Gas Mitigation Measures, 2010.

building materials), and worker trips were based on relatively conservative assumptions for a project of this type and scale as provided in the CalEEMod model. A complete listing of the construction equipment by phase and construction phase duration assumptions used in this analysis is included within the CalEEMod printout sheets that are provided in **Appendix A** of this Technical Report.

Construction of the Project was assumed to begin in late 2018. Construction may commence at a later date than that analyzed in this GHG emissions analysis. If this occurs, construction impacts would be less than those analyzed herein, because a more energy-efficient and cleaner burning construction equipment fleet mix would be expected in the future, pursuant to State regulations that require construction equipment fleet operators to phase-in less polluting heavy-duty equipment. As a result, should the Project commence construction at a later date, GHG emissions would be less than the impacts disclosed herein. Subphases of construction would include demolition of the all existing on-site buildings and features, site clearing, grading, excavation, and building construction. The Project was estimated to result in the export of approximately 30,200 cubic yards of soil during grading and excavation activities. Demolition activities would generate approximately 17 tons of building and hardscape demolition debris. Emissions from these activities are estimated by construction phase using CalEEMod.

Construction haul and vendor truck emissions during grading, concrete pour and building construction were evaluated using regional heavy-duty truck emission factors from EMFAC2014, as incorporated into CalEEMod. Truck trips and default trip length data were used to assess roadway emissions from truck exhaust, as well as typical CARB idling times of local emissions on-site.

The CO_2e emissions are calculated for the construction period and future Project build-out conditions in order to estimate the net change in GHG emissions for Project construction and operation. The SCAQMD recognizes that construction-related GHG emissions from projects "occur over a relatively short-term period of time" and that "they contribute a relatively small portion of the overall lifetime project GHG emissions."[31] The SCAQMD recommends that construction project GHG emissions should be "amortized over a 30-year project lifetime, so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies."[32] As such, GHG emissions from construction have been amortized over the 30-year lifetime of the Project (i.e., total construction GHG emissions were divided by 30 to determine an annual construction emissions estimate comparable to operational emissions).

31 South Coast Air Quality Management District, Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold, 2008, page 3-9, http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf. Accessed January 2018.

32 South Coast Air Quality Management District, Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold, 2008, page 3-9.

3.3 Operational Emissions

Operational emissions are also estimated using the CalEEMod software and CARB's on-road vehicle emissions factor (EMFAC2014) model on-road emissions factor model, as incorporated into CalEEMod. CalEEMod was used to estimate GHG emissions from electricity, natural gas, solid waste, water and wastewater, and landscaping equipment. In 2014, Pasadena Water and Power provided approximately 29 percent of electricity via renewable sources but has indicated it would provide an increasing percentage from renewable sources that would exceed the Renewables Portfolio Standard with 40 percent by 2020.[33] An estimated emission factor of 774 lbs CO_2/MWh was calculated based on Pasadena Water and Power projections for providing 40 percent renewable electricity by 2020.[34, 35]

Operational GHG emissions are assessed based on the Project-related incremental increase in GHG emissions compared to baseline conditions. Under CEQA, the baseline environmental setting is established as the time that environmental assessment commences. Since the existing land use is currently vacant and does currently generate vehicle trips, all operational Project trips are assumed to be new trips. Similarly, the Project's energy, waste, and water GHG emissions are all assumed to generate new emissions. Detailed operational GHG emissions calculations are provided in **Appendix B** of this Technical Report.

As previously discussed, CAPCOA has provided guidance on mitigating or reducing GHG emissions from land use development projects in its guidance document titled *Quantifying Greenhouse Gas Mitigation Measures*.[36] The CAPCOA guidance document was utilized in this analysis for quantifying reductions from physical and operational Project characteristics and Project Design Features in CalEEMod.

3.4 Project Characteristics and Project Design Features

3.4.1 Land Use Characteristics

The Project would represent an urban infill development, since it would be undertaken on a currently developed property, and would be located near existing off-site commercial, residential, and retail destinations and in close proximity to existing public transit stops. Infill development results in reduced vehicle trips and VMT, and reduced associated transportation-related emissions compared to a project without these characteristics. As discussed below under land use characteristic "Increased Transit Accessibility", because the Project consists of residential uses, and the Project Site is a previously developed "infill" site located within 0.35 miles of Metro's

33 Pasadena Water and Power, 2015 Integrated Resource Plan Update (2015) 1.

34 Pasadena Water and Power, 2012 Integrated Resource Plan Update (2012). Available at: https://ww5.cityofpasadena.net/water-and-power/wp-content/uploads/sites/54/2017/08/2012-IRP-Update.pdf. Accessed: July 2018.

35 Pasadena Water and Power, 2015 IRP Load Forecast (2015). Available at: https://ww5.cityofpasadena.net/water-and-power/wp-content/uploads/sites/54/2017/08/IRP-Load-Forecast-Summary.pdf. Accessed: March 2018.

36 California Air Pollution Control Officers Association, Quantifying Greenhouse Gas Mitigation Measures, 2010.

Del Mar Station, the Project meets the criteria of the City as a Transportation Priority Area (TPA).

As discussed above, CAPCOA has provided guidance for mitigating or reducing emissions from land use development projects within its guidance document titled *Quantifying Greenhouse Gas Mitigation Measures*. The land use characteristics listed below are consistent with the CAPCOA guidance document, and would reduce vehicle trips to and from the Project Site and vehicle trip distances and would achieve a reduction in transportation-related air pollutant and GHG emissions.

- **Increased Density:** Increased density, measured in terms of persons, jobs, and/or dwelling units per unit area, reduces emissions associated with transportation as it reduces the distance people travel for work or services and provides a foundation for the implementation of other strategies such as enhanced transit services. This characteristic corresponds to CAPCOA guidance strategy LUT-1.[37] According to CAPCOA, the reduction in VMT from this characteristic applies to urban and suburban settings for residential, retail, office, industrial, and mixed-use projects. The Project is located in an urban infill[38] location and is residential; therefore, this characteristic applies to the Project. The Project would increase the Project Site density to approximately 112 dwelling units per acre.

- **Increased Transit Accessibility:** Locating a project with high density near transit facilitates encourages the use of transit by people traveling to or from a project site. This characteristic corresponds to CAPCOA guidance strategy LUT-5.[39] According to CAPCOA, the reduction in VMT from this characteristic applies to urban and suburban settings (also potentially for rural settings adjacent to a commuter rail station with convenient access to a major employment center) for residential, retail, office, industrial, and mixed-use projects. The Project is located in an urban infill location and is residential; therefore, this characteristic applies to the Project. According to the CAPCOA guidance, factors that contribute to VMT reductions under this characteristic include the distance to transit stations near the Project. The Project would be located within a quarter-mile of public transportation, including the Metro Del Mar Station that serves the Gold Line. The Project is also within a quarter mile of the Metro bus 264 and 267 routes, and LADOT's 549 route. The Project would also provide parking for bicycles on-site to encourage utilization of alternative modes of transportation. The increased transit accessibility would reduce vehicle trips and VMT versus the statewide and South Coast Air Basin average, encourage walking and non-automotive forms of transportation, and would result in corresponding reductions in transportation-related emissions.

- **Integrated Affordable and Below Market Rate Housing:** Below market rate housing provides greater opportunity for people to live closer to job centers and to accommodate more

37 California Air Pollution Control Officers Association, Quantifying Greenhouse Gas Mitigation Measures, p. 155-158, (2010).

38 California Air Pollution Control Officers Association, Quantifying Greenhouse Gas Mitigation Measures, p. 59-60, (2010). The project area meets the characteristics for an urban setting with respect to grid street pattern, minimal setbacks, constrained and paid parking, access to high quality rail service (i.e., Metro Gold Line), location relative to regional cores (5 miles or less), and a jobs/housing balance of 1.87 in 2013 and a projected 2.02 in 2020 (see City of Pasadena, General Plan Plan EIR, State Clearinghouse No. 2013091009, page 5.10-15, January 2015).

39 California Air Pollution Control Officers Association, Quantifying Greenhouse Gas Mitigation Measures, p. 171-175, (2010).

people in urban infill areas. The Project would include 8 below market rate dwelling units (approximately 9 percent of the total number of dwelling units), which would result in an increase in alternative transit usage and a corresponding reduction in transportation-related emissions.

- **Improve Design of Development:** Improved street network characteristics within a neighborhood enhances walkability and connectivity. Characteristics include street accessibility usually measured in terms of number of intersections (e.g., 4-way intersections) per square mile. This characteristic corresponds to CAPCOA guidance strategy LUT-9.[40] According to CAPCOA, the reduction in VMT from this characteristic applies to urban and suburban settings for residential, retail, office, industrial, and mixed-use projects. The Project is located in an urban infill location and is residential; therefore, this characteristic applies to the Project. The Project would be located in a street-accessible area with over 100 four-way intersections within a 1-mile radius of the Project Site, which exceeds the standard intersection density assumed in baseline VMT modeling. The increased intersection density would reduce vehicle trips and VMT versus the statewide and South Coast Air Basin average, encourage walking and non-automotive forms of transportation, and would result in corresponding reductions in transportation-related emissions.

- **Provide Pedestrian Network Improvements:** Providing pedestrian access that minimizes barriers and links a project site with existing or planned external streets encourages people to walk instead of drive. This characteristic corresponds to CAPCOA guidance strategy SDT-1.[41] According to CAPCOA, the reduction in VMT from this characteristic applies to urban, suburban, and rural settings for residential, retail, office, industrial, and mixed-use projects. The Project is located in an urban infill location and is residential; therefore, this characteristic applies to the Project. According to the CAPCOA guidance, factors that contribute to VMT reductions under this characteristic include pedestrian access connectivity within the Project and to/from off-site destinations. The walkability of existing facilities is based on the availability of pedestrian routes necessary to accomplish daily tasks without the use of an automobile. These attributes are quantified by WalkScore.com and assigned a score out of 100 points. With the various commercial businesses and recreational and entertainment facilities adjacent to the Project Site and proximity to public transit, the walkability of rating of the Project Site area is approximately 86 points;[42] this compares to the Citywide score of 66 points. The Project would provide common open space and walkways on its ground level that allow residents access South Los Robles Avenue from the South East and North Sides of the property. The Project would provide an internal pedestrian network for Project visitors and employees that links to the existing off-site pedestrian network including existing off-site sidewalks, and would therefore result in some reduction in VMT and associated transportation-related emissions.

Reductions in VMT were calculated for the above described land use characteristics. The Project's VMT would be reduced by approximately 33.3 percent compared to the Statewide and

40 California Air Pollution Control Officers Association, Quantifying Greenhouse Gas Mitigation Measures, p. 182-185, (2010).

41 California Air Pollution Control Officers Association, Quantifying Greenhouse Gas Mitigation Measures, p. 186-189, (2010).

42 WalkScore.com (www.walkscore.com) rates the Project Site area (253 S Los Robles Avenue, Pasadena, CA) with a score of 86 of 100 possible points (scores accessed on March 23, 2018). Walk Score calculates the walkability of specific addresses by taking into account the ease of living in the neighborhood with a reduced reliance on automobile travel.

South Coast Air Basin default trip parameters in CalEEMod based on the calculation protocol from the CAPCOA guidance.

3.4.2 Project Design Features

The Project would be designed to incorporate green building techniques and other sustainability features. The following Project Design Features would reduce air pollutant emissions as well as greenhouse gas emissions. To the extent they can be quantified, these features have been assumed in the emissions calculations, but all of these features are considered in the consistency analysis:

> **Green Building Features:** The Project will be designed to achieve the equivalent of the United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Silver Certification level for new buildings. The Project will be designed to meet the California Green Building Standards (CALGreen) Code, as adopted and amended by the City of Pasadena, through the incorporation of green building techniques and other sustainability features, including those within the City of Pasadena Green Building Code, where applicable.

- The Project includes key Project Design Features that would contribute to energy efficiencies include low albedo (high reflectivity) color paving to reduce heat island effect.
- The Project will optimize building energy performance and reduce building energy cost by a minimum of 5 percent for new construction compared to the Title 24 Building Energy Efficiency Standards (2016), through incorporating building features that would include, but not limited to, such items as installation of energy-efficient lighting, heating, ventilation, air conditioning (HVAC) systems that utilize ozone-friendly refrigerants, and energy-efficient appliances for residential dishwashers and clothes washers (to the extent that these appliances are provided by the Project owner or operator and installed within the dwelling units).
- The Project includes bicycle parking, would encourage the use of alternative modes of transportation, and encourage carpooling and the use of electric vehicles by Project residents and visitor where the Project provides pre-wiring or installing conduit and panel capacity for electric vehicle supply equipment (EVSE) for 5 percent of total on-site parking spaces.
- The Project will not include built-in fireplaces in residential units.
- The Project will minimize outdoor potable water use through drought-tolerant/California native plant species selection and/or artificial turf and use of a high-efficiency irrigation system.
- The Project will reduce indoor potable water use by installing low-flow water fixtures for showerheads and bathroom faucets.
- The Project will provide new on-site residents with regional transit information available.

3.5 Project GHG Efficiency

The City of Pasadena Climate Action Plan Consistency Checklist states that total GHG emissions associated with the Project, which includes both construction and operations, should be divided

by the Project's service population in order to determine the GHG efficiency of the Project using the following equation:

> Proposed Project's GHG Efficiency = Annual GHG Emissions ($MTCO_2e$) / Service Population (number of residents + full-time employees)

4.0
Environmental Impacts

4.1 Greenhouse Gas Emissions

4.1.1 Construction Emissions

The emissions of GHGs associated with construction of the Project were calculated for each year of construction activity using CalEEMod. Results of the GHG emissions calculations are presented on **Table 2**, *Estimated Unmitigated Construction Greenhouse Gas Emissions*. It should be noted that the GHG emissions shown in **Table 2** are based on construction equipment operating continuously throughout the work day. In reality, construction equipment tends to operate periodically or cyclically throughout the work day. Therefore, the GHG emissions shown reflect a conservative estimate.

Although GHGs are generated during construction and are accordingly considered 1-time emissions, it is important to include them when assessing all of the long-term GHG emissions associated with a project. The SCAQMD recommends that construction-related GHG emissions be amortized over a project's 30-year lifetime in order to include these emissions as part of a project's annualized lifetime total emissions, so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies. In accordance with this methodology, the estimated Project's construction GHG emissions have been amortized over a 30-year period and are included in the annualized operational GHG emissions.

Due to the potential persistence of GHGs in the environment, impacts are based on annual emissions and, in accordance with SCAQMD methodology, construction-period impacts are not assessed independent of operational-period impacts, which are discussed in the next section.[43]

4.1.2 Operational Emissions

GHG emissions associated with operation of the Project were calculated to disclose operational emissions from the Project and were estimated using the CalEEMod model. The Project is designed to include green building techniques and other sustainability features. The Project must comply with the portions of City's Green Building Code applicable to high-rise residential development. Additionally, physical and operational Project characteristics for which sufficient data is available to quantify the reductions from building energy and resource consumption have been included in the quantitative analysis, and include the following measures from PDF Green Building Features, installation of energy efficient appliances; low-water fixtures; and building

43 South Coast Air Quality Management District, Greenhouse Gas CEQA Significance Threshold Stakeholder Working Group #12, http://www.aqmd.gov/ceqa/handbook/GHG/2009/july29mtg/ghgmtg12.pdf. January 2018.

energy usage consistent with the California Title 24 Building Energy Efficiency Standards for Tier 1 buildings.

Maximum annual GHG emissions resulting from motor vehicles, energy (i.e., electricity, natural gas), water conveyance and wastewater treatment, and solid waste were calculated for the expected opening year (2020). The maximum opening year GHG emissions from operation of the Project are shown in **Table 3**, *Annual Greenhouse Gas Emissions*. The maximum opening year GHG emissions was used to calculate the Project's service population efficiency and was conservatively compared to the GHG efficiency thresholds for projects with the first operational year between 2021 to 2025 of 4.56 MT CO_2e/Service Person. As shown in **Table 3**, the Project's opening year GHG emissions would be below the City's applicable GHG efficiency threshold. Therefore, this analysis demonstrates that the Project's GHG efficiency would fulfill Step 3 of the Climate Action Plan Consistency Checklist through Option B and would therefore be consistent with Pasadena's CAP.

The Project would comply with the City of Pasadena Green Building Code to reduce GHG emissions by increasing energy-efficiency beyond requirements, reducing indoor and outdoor water demand, installing energy-efficient appliances and equipment, and complying with 2016 California Title 24 Building Energy Efficiency Standards, as amended by the City. The Project would also meet the mandatory measures of the CALGreen Code as amended by the City by incorporating strategies such as low-flow toilets, low-flow faucets, low-flow showers, and other energy and resource conservation measures. The heating, ventilation, and air conditioning (HVAC) system would be sized and designed in compliance with the CALGreen Code to maximize energy efficiency caused by heat loss and heat gain. Therefore, the Project would be consistent with the City's Green Building Code.

TABLE 2
ESTIMATED UNMITIGATED CONSTRUCTION GREENHOUSE GAS EMISSIONS

Construction Year	CO_2e (Metric Tons) [a, b]
Year 1	109
Year 2	469
Year 3	293
Total	**870**
Amortized Emissions (30-years)	**29**

[a] Totals may not add up exactly due to rounding in the modeling calculations.

[b] CO_2e emissions are calculated using the global warming potential values from the Intergovernmental Panel on Climate Change Fourth Assessment Report: 25 for CH_4 and 298 for N_2O (Intergovernmental Panel on Climate Change, Fourth Assessment Report: The Physical Science Basis, Summary for Policy Makers, (2007))

SOURCE: ESA, 2018

TABLE 3
ANNUAL GREENHOUSE GAS EMISSIONS

Emissions Sources	Project CO_2e (Metric Tons per Year) [a] Proposed Project
Proposed Project Operational	
On-Road Mobile Sources	557
Area	2
Electricity	288
Natural Gas	55
Water Conveyance and Wastewater Treatment	47
Solid Waste	7
Construction (Amortized)	29
Proposed Project Subtotal	**984**
Project Service Population [b]	223
Project GHG Emissions (Per Service Person)	**4.42**
GHG Efficiency Threshold	**4.56**
Exceeds Performance Standard	**No**

[a] Totals may not add up exactly due to rounding in the modeling calculations.
[b] Project service population calculated by number of residential units multiplied by Average Household size for City of Pasadena provided by California Department of Finance.
[c] GHG efficiency threshold is present in Appendix D - Climate Action Plan Consistency Checklist of the Pasadena CAP.

SOURCE: ESA, 2018; City of Pasadena, 2018

4.2 Conclusion

In summary, the GHG emissions analysis provided above and the Project's consistency with applicable regulatory plans and policies to reduce GHG emissions demonstrates that the Project would substantially comply with or exceed the GHG reduction actions and strategies outlined in the City of Pasadena Climate Action Plan and Green Building Code.

As discussed above, the Project would incorporate characteristics that would achieve reductions in VMT based on substantial evidence according to VMT reduction guidelines from CAPCOA's guidance document, *Quantifying Greenhouse Gas Mitigation Measures*, which provides emission reduction calculation formulas for transportation characteristics and measures[44] that demonstrate that the Project would be sited in a location that is well served by multi-modal transportation choices. As such, the Project would be consistent with regional plans to reduce VMT and associated GHG emissions. As shown in **Table 3**, the Project would be consistent with the City of Pasadena's a Climate Action Plan where the Project's GHG efficiency would be below the GHG efficiency threshold present in Appendix D - Climate Action Plan Consistency Checklist.

44 California Air Pollution Control Officers Association, Quantifying Greenhouse Gas Mitigation Measures, 2010.

Greenhouse Gas Technical Report Appendix

ESA

Appendix A
Project Construction Emissions

253 Los Robles Last Updated 3/12/2018
Air Quality and Greenhouse Gas Assessment

Table 1. Land Use and California Emissions Estimator Model (CalEEMod) Inputs

Land Use	CalEEMod Land Use Type	CalEEMod Land Use SubType	Value	Unit	Value	Unit
Existing						
Office Building	Commercial	General Office Building	43.54	ksf	43,544	sf
Landscaping			4.58	ksf	4,580	sf
Parking	Parking		124.00	spaces		

Proposed Project	CalEEMod Land Use Type	CalEEMod Land Use SubType	Value	Unit	Value	Unit
Residential						
Condominiums	**Residential**	**High-Rise Condo/Townhouse Rise**	**92**	**DU**	**94,165**	**sf**
One Bedroom			58	DU		
Two Bedroom			26	DU		
Gym	**Recreational**	**Health Club**	**2**	**ksf**	**1,699**	**sf**
Landscaping	**Recreational**	**City Park**	**16**	**ksf**	**15,546**	**sf**
Open Space	**Parking**	**Other Non-Asphalt Surfaces**	**22**	**ksf**	**22,320**	**sf**
Private Balconies	**Parking**	Other Non-Asphalt Surfaces	7	ksf	6,938	sf
Common Open Space			15	ksf	15,382	sf
Courtyard	**Parking**	Other Non-Asphalt Surfaces	2	ksf	2,432	sf
Additional Front Yard	**Parking**	Other Non-Asphalt Surfaces	1	ksf	963	sf
North Yard	**Parking**	Other Non-Asphalt Surfaces	3	ksf	3,051	sf
Patio Easement	**Parking**	Other Non-Asphalt Surfaces	2	ksf	2,251	sf
South Yard	**Parking**	Other Non-Asphalt Surfaces	3	ksf	2,556	sf
6th-Floor East Terrace	**Parking**	Other Non-Asphalt Surfaces	2	ksf	2,037	sf
6th-Floor Sundeck	**Parking**	Other Non-Asphalt Surfaces	2	ksf	2,092	sf
Parking	**Parking**	**Enclosed Parking Structure with Elevator**	**131**	**spaces**	**69,668**	**sf**
Basement 1	**Parking**	Enclosed Parking Structure with Elevator	41	spaces	23,157	sf
Basement 2	**Parking**	Enclosed Parking Structure with Elevator	43	spaces	23,158	sf
Basement 3	**Parking**	Enclosed Parking Structure with Elevator	47	spaces	23,353	sf

CALEEMOD INPUT SUMMARY	CalEEMod Land Use Type	CalEEMod Land Use SubType	Value	Unit	Value	Unit	Acreage
Condominiums	**Residential**	**High-Rise Condo/Townhouse Rise**	**92**	**DU**	**92,466**	**sf**	**0.35**
Health Club	**Recreational**	**Health Club**	**2**	**ksf**	**1,699**	**sf**	**0.1**
Other Non-Asphalt Surfaces	**Parking**	**Other Non-Asphalt Surfaces**	**22**	**ksf**	**22,320**	**sf**	**0.115**
Enclosed Parking Structure with Elevator	**Parking**	**Enclosed Parking Structure with Elevator**	**131**	**spaces**	**69,668**	**sf**	**0.25**
						Total	**0.815**

Table 2. Construction Schedule and California Emissions Estimator Model (CalEEMod) Inputs

Construction Phase	Start Date	End Date	No. Work Days [1]	Maximum Number of Daily Workers[2]	Worker One-Way Trips/Max Day [3]	Worker Trip length (mi) [4]
Demolition	11/1/2018	12/31/2018	52	5	10	14.7
Site Preparation	11/1/2018	12/31/2018	52	3	6	14.7
Grading/Excavation	1/1/2019	4/15/2019	90	5	10	14.7
Drainage/Utilities/Trenching	4/16/2019	6/15/2019	53	5	10	14.7
Foundations/Concrete Pouring	6/16/2019	11/15/2019	131	8	16	14.7
Building Construction	11/16/2019	5/15/2020	156	18	36	14.7
Paving	8/1/2020	9/30/2020	52	5	10	14.7
Architectural Coatings	5/16/2020	8/31/2020	92	8	16	14.7

Notes:
1. Number of days based on client provided data.
2. Max daily workers based on client provided data
3. Assumes trips to and from the site for each worker
4. Worker trip length provided by CalEEMod default
5. Accounts for water trucks onsite for reducing fugitive dust
6. Conservative estimtates for dispostal sites and concrete truck vendor locations

Work Hours
Mon-Fri 7am – 7pm
Saturday 8am - 5pm

Source: Odyssey Development Services, 2018. ESA, 2018.

253 Los Robles
Air Quality and Greenhouse Gas Assessment

Construction Assumptions - Demolition

Demolition Schedule		**Notes**
Start Date	11/1/2018	
End Date	12/31/2018	
Work Days	52	
Demolition Quantities		
Hardscape Demolition Volume		**Notes**
Total Area(KSF)	24,550.0	
Tons of Debris	6	
Building Demolition Volume		**Notes**
Total Area (KSF)	21,898.0	
Tons of Debris	11	
Total Debris (CY)	17	
Truck Size (CY)	14	
Total Trucks	91	
Trucks per day	30.00	
Total One-Way Trips	182	
Daily One-Way Trips	60	

Disposal Site Distance (mi) 20

Source: Odyssey Development Services, 2018. ESA, 2018.

253 Los Robles
Air Quality and Greenhouse Gas Assessment

Site Preparation

Earthwork	Amount
Total Earthwork Removal Export (CY)	40
Daily Earthwork Export (CY)	40
Capacity of Haul Trucks (CY)	10
Total Truck Hauls	4
Daily Truck Hauls	1
Daily One-way Trips	2
Distance to Disposal Site	20
Total Work days	52

Disposal Site Distance (miles) 20

Source: Odyssey Development Services, 2018. ESA, 2018.

253 Los Robles
Air Quality and Greenhouse Gas Assessment

Grading Phase Soil Hauling Trips

Excavation Volume	Value
Total Soil Exported (CY)	30,200
Maximum grading area one day (acres)	0.75
# of Work Days	90.0
Total Number of Haul Trucks	1,510.00
Daily Haul Trucks	30
Daily One-way Trips	60.00
Capacity of Haul Trucks	20.00
Distance to Disposal Site (miles)	20

Source: Odyssey Development Services, 2018. ESA, 2018.

253 Los Robles last update: 3/12/2018

Air Quality and Greenhouse Gas Assessment

Concrete/Concrete Truck Estimates	Value
Total Concrete Volume (CY)	8,786
Cement Truck Capacity (CY) [1]	10
Total Trucks Needed	879
Total Number of One-way Truck Trips	1757.2
Working days	131
Daily (CY) of concrete	216
Daily Trucks	22
Daily One-way Truck Trips	44

Notes:

Source: Odyssey Development Services, 2018. ESA, 2018.

253 Los Robles
Resource Loaded Construction Schedule

last updated:
3/12/2018

On-Site/Off-Road Equipment	2018												2019												2020											
Month	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Phase:																																				
Demolition																																				
Rubber Tired Loader											1	1																								
Tractors/Loaders/Backhoes											1	1																								
Site Preparation																																				
Bore/Drill Rig											1	1																								
Rubber Tired Loader											1	1																								
Tractors/Loaders/Backhoes											1	1																								
Grading/Excavation																																				
Compactor													1	1	1	1																				
Excavators													1	1	1	1																				
Haul Trucks													1	1	1	1																				
Tractors/Loaders/Backhoes													1	1	1	1																				
Drainage/Utilities/Trenching																																				
Tractors/Loaders/Backhoes																1	1	1																		
Trencher																1	1	1																		
Foundations/Concrete Pouring																																				
Air Compressors																	1	1	1	1	1	1														
Tractors/Loaders/Backhoes																	1	1	1	1	1	1														
Cement/Mortar Mixers																	1	1	1	1	1	1														
Pumps																	1	1	1	1	1	1														
Building Construction																																				
Air Compressors																			2	2	2	2	2	2	2	2	2	2	2	2						
Concrete/Industrial Saws																			2	2	2	2	2	2	2	2	2	2	2	2						
Forklifts																			1	1	1	1	1	1	1	1	1	1	1	1						
Generator Sets																			1	1	1	1	1	1	1	1	1	1	1	1						
Paving																																				
Paving Equipment																																		1	1	
Architectural Coatings																																				
Air Compressors																															1	1	1	1		
Forklifts																															1	1	1	1		

253 S. Los Robles - Construction

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse High Rise	92.00	Dwelling Unit	0.35	92,466.00	263
Health Club	1.70	1000sqft	0.10	1,699.00	0
Other Non-Asphalt Surfaces	22.32	1000sqft	0.12	22,320.00	0
Enclosed Parking with Elevator	131.00	Space	0.25	69,668.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2021
Utility Company	Pasadena Water & Power				
CO2 Intensity (lb/MWhr)	1664.14	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - see construction assumptions

Construction Phase - see construction assumptions

Off-road Equipment - see construction assumptions

Off-road Equipment - see construction assumptions

Off-road Equipment - see construction assumptions

Off-road Equipment - see construction assumptions

Off-road Equipment - see construction assumptions

Off-road Equipment - see construction assumptions

Off-road Equipment - see construction assumptions

Off-road Equipment - see construction assumptions

Grading - see construction assumptions

Demolition -

Trips and VMT - see construction assumptions. Hauling truck trips were increased to match client's number of max daily hauling trips for demolition, site preparation, grading phases and foundations/concrete pouring. Will be scaled down for CHC calculations.

Woodstoves - see construction assumptions

Construction Off-road Equipment Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	5.00	92.00
tblConstructionPhase	NumDays	100.00	156.00
tblConstructionPhase	NumDays	10.00	52.00
tblConstructionPhase	NumDays	2.00	90.00
tblConstructionPhase	NumDays	5.00	52.00
tblConstructionPhase	NumDays	1.00	52.00
tblConstructionPhase	NumDays	100.00	131.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	4/22/2019	8/31/2020
tblConstructionPhase	PhaseEndDate	4/8/2019	5/15/2020

tblConstructionPhase	PhaseEndDate	11/14/2018	12/31/2018
tblConstructionPhase	PhaseEndDate	11/19/2018	4/15/2019
tblConstructionPhase	PhaseEndDate	4/15/2019	9/30/2020
tblConstructionPhase	PhaseEndDate	11/15/2018	12/31/2018
tblConstructionPhase	PhaseStartDate	4/16/2019	5/16/2020
tblConstructionPhase	PhaseStartDate	11/20/2018	11/16/2019
tblConstructionPhase	PhaseStartDate	11/16/2018	1/1/2019
tblConstructionPhase	PhaseStartDate	4/9/2019	8/1/2020
tblConstructionPhase	PhaseStartDate	11/15/2018	11/1/2018
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	78.20	0.00
tblFireplaces	NumberNoFireplace	9.20	0.00
tblFireplaces	NumberWood	4.60	0.00
tblGrading	AcresOfGrading	0.00	0.82
tblGrading	AcresOfGrading	0.00	0.82
tblGrading	MaterialExported	0.00	30,200.00
tblGrading	MaterialExported	0.00	40.00
tblLandUse	LandUseSquareFeet	92,000.00	92,466.00
tblLandUse	LandUseSquareFeet	52,400.00	69,668.00
tblLandUse	LotAcreage	1.44	0.35
tblLandUse	LotAcreage	0.04	0.10
tblLandUse	LotAcreage	0.51	0.12
tblLandUse	LotAcreage	1.18	0.25
tblOffRoadEquipment	HorsePower	78.00	63.00
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38

tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.48	0.31
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	12.00
tblOffRoadEquipment	UsageHours	6.00	12.00
tblOffRoadEquipment	UsageHours	6.00	12.00
tblOffRoadEquipment	UsageHours	6.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripNumber	2.00	3,120.00
tblTripsAndVMT	HaulingTripNumber	5.00	104.00
tblTripsAndVMT	HaulingTripNumber	3,775.00	5,400.00
tblTripsAndVMT	VendorTripNumber	25.00	44.00
tblTripsAndVMT	WorkerTripNumber	5.00	10.00
tblTripsAndVMT	WorkerTripNumber	8.00	6.00
tblTripsAndVMT	WorkerTripNumber	106.00	36.00
tblTripsAndVMT	WorkerTripNumber	3.00	10.00
tblTripsAndVMT	WorkerTripNumber	21.00	16.00
tblTripsAndVMT	WorkerTripNumber	106.00	16.00
tblTripsAndVMT	WorkerTripNumber	5.00	10.00
tblWoodstoves	NumberCatalytic	4.60	0.00
tblWoodstoves	NumberNoncatalytic	4.60	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0847	1.3274	0.5325	2.4500e-003	0.0329	0.0354	0.0683	8.8900e-003	0.0326	0.0415	0.0000	232.1095	232.1095	0.0404	0.0000	233.1195
2019	0.3072	3.5153	2.4079	6.7100e-003	0.0968	0.1402	0.2370	0.0264	0.1346	0.1610	0.0000	617.3169	617.3169	0.0779	0.0000	619.2651
2020	0.5103	1.6097	1.7346	3.3300e-003	0.0432	0.0893	0.1325	0.0117	0.0882	0.0999	0.0000	291.9975	291.9975	0.0246	0.0000	292.6114
Maximum	**0.5103**	**3.5153**	**2.4079**	**6.7100e-003**	**0.0968**	**0.1402**	**0.2370**	**0.0264**	**0.1346**	**0.1610**	**0.0000**	**617.3169**	**617.3169**	**0.0779**	**0.0000**	**619.2651**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0847	1.3273	0.5325	2.4500e-003	0.0325	0.0354	0.0679	8.8500e-003	0.0326	0.0415	0.0000	232.1094	232.1094	0.0404	0.0000	233.1194
2019	0.3072	3.5153	2.4079	6.7100e-003	0.0955	0.1402	0.2357	0.0262	0.1346	0.1608	0.0000	617.3166	617.3166	0.0779	0.0000	619.2647
2020	0.5103	1.6097	1.7346	3.3300e-003	0.0432	0.0893	0.1325	0.0117	0.0882	0.0999	0.0000	291.9972	291.9972	0.0246	0.0000	292.6112
Maximum	**0.5103**	**3.5153**	**2.4079**	**6.7100e-003**	**0.0955**	**0.1402**	**0.2357**	**0.0262**	**0.1346**	**0.1608**	**0.0000**	**617.3166**	**617.3166**	**0.0779**	**0.0000**	**619.2647**

	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**	**0.97**	**0.00**	**0.39**	**0.49**	**0.00**	**0.08**	**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	11-1-2018	1-31-2019	1.8867	1.8867
2	2-1-2019	4-30-2019	1.2043	1.2043
3	5-1-2019	7-31-2019	0.6122	0.6122

4	**8-1-2019**	**10-31-2019**	0.8114	0.8114
5	**11-1-2019**	**1-31-2020**	1.0438	1.0438
6	**2-1-2020**	**4-30-2020**	1.0098	1.0098
7	**5-1-2020**	**7-31-2020**	0.5218	0.5218
8	**8-1-2020**	**9-30-2020**	0.2353	0.2353
		Highest	1.8867	1.8867

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	11/1/2018	12/31/2018	6	52	
2	Site Preparation	Site Preparation	11/1/2018	12/31/2018	6	52	
3	Grading	Grading	1/1/2019	4/15/2019	6	90	
4	Building Construction	Building Construction	11/16/2019	5/15/2020	6	156	
5	Paving	Paving	8/1/2020	9/30/2020	6	52	
6	Architectural Coating	Architectural Coating	5/16/2020	8/31/2020	6	92	
7	Drainage/Utilities/Trenching	Trenching	4/16/2019	6/15/2019	6	53	
8	Foundations/Concrete Pouring	Building Construction	6/16/2019	11/15/2019	6	131	

Acres of Grading (Site Preparation Phase): 0.815

Acres of Grading (Grading Phase): 0.815

Acres of Paving: 0.365

Residential Indoor: 187,244; Residential Outdoor: 62,415; Non-Residential Indoor: 2,549; Non-Residential Outdoor: 850; Striped Parking

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	12.00	78	0.48
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Building Construction	Cranes	0	4.00	231	0.29

Building Construction	Forklifts	1	12.00	89	0.20
Site Preparation	Graders	0	8.00	187	0.41
Paving	Pavers	0	7.00	130	0.42
Paving	Rollers	0	7.00	80	0.38
Demolition	Rubber Tired Dozers	0	1.00	247	0.40
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	1	12.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	12.00	97	0.37
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	12.00	97	0.37
Foundations/Concrete Pouring	Cranes	0	4.00	231	0.29
Foundations/Concrete Pouring	Forklifts	0	6.00	89	0.20
Foundations/Concrete Pouring	Tractors/Loaders/Backhoes	1	12.00	97	0.37
Demolition	Rubber Tired Loaders	1	12.00	203	0.36
Site Preparation	Rubber Tired Loaders	1	12.00	203	0.36
Site Preparation	Bore/Drill Rigs	1	12.00	221	0.50
Grading	Plate Compactors	1	12.00	8	0.43
Grading	Excavators	1	12.00	158	0.38
Grading	Rubber Tired Loaders	1	12.00	203	0.36
Building Construction	Air Compressors	2	12.00	63	0.31
Building Construction	Concrete/Industrial Saws	2	12.00	81	0.73
Building Construction	Generator Sets	1	12.00	84	0.74
Paving	Paving Equipment	1	12.00	132	0.36
Drainage/Utilities/Trenching	Tractors/Loaders/Backhoes	1	12.00	97	0.37
Drainage/Utilities/Trenching	Trenchers	1	12.00	78	0.50
Foundations/Concrete Pouring	Air Compressors	1	12.00	78	0.48
Foundations/Concrete Pouring	Cement and Mortar Mixers	1	12.00	9	0.56
Foundations/Concrete Pouring	Pumps	1	12.00	84	0.74

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
Demolition	2	10.00	0.00	3,120.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	6.00	0.00	104.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	5,400.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	6	36.00	25.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	1	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	16.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Foundations/Concrete Pouring	4	16.00	44.00	0.00	14.70	6.90	25.00	LD_Mix	HDT_Mix	HHDT
Drainage/Utilities/Trenching	2	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.8000e-004	0.0000	1.8000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0272	0.3113	0.1592	3.7000e-004		0.0143	0.0143		0.0132	0.0132	0.0000	33.4266	33.4266	0.0104	0.0000	33.6868
Total	**0.0272**	**0.3113**	**0.1592**	**3.7000e-004**	**1.8000e-004**	**0.0143**	**0.0145**	**3.0000e-005**	**0.0132**	**0.0132**	**0.0000**	**33.4266**	**33.4266**	**0.0104**	**0.0000**	**33.6868**

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	0.0157	0.5210	0.1075	1.2600e-003	0.0268	1.9300e-003	0.0287	7.3600e-003	1.8500e-003	9.2100e-003	0.0000	123.0468	123.0468	8.6800e-003	0.0000	123.2638
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	1.4400e-003	1.2300e-003	0.0133	3.0000e-005	2.8500e-003	3.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.8000e-004	0.0000	2.8309	2.8309	1.1000e-004	0.0000	2.8335
Total	**0.0171**	**0.5222**	**0.1207**	**1.2900e-003**	**0.0297**	**1.9600e-003**	**0.0316**	**8.1200e-003**	**1.8700e-003**	**9.9900e-003**	**0.0000**	**125.8777**	**125.8777**	**8.7900e-003**	**0.0000**	**126.0973**

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					7.0000e-005	0.0000	7.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0272	0.3113	0.1592	3.7000e-004		0.0143	0.0143		0.0132	0.0132	0.0000	33.4266	33.4266	0.0104	0.0000	33.6867
Total	**0.0272**	**0.3113**	**0.1592**	**3.7000e-004**	**7.0000e-005**	**0.0143**	**0.0144**	**1.0000e-005**	**0.0132**	**0.0132**	**0.0000**	**33.4266**	**33.4266**	**0.0104**	**0.0000**	**33.6867**

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	0.0157	0.5210	0.1075	1.2600e-003	0.0268	1.9300e-003	0.0287	7.3600e-003	1.8500e-003	9.2100e-003	0.0000	123.0468	123.0468	8.6800e-003	0.0000	123.2638
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	1.4400e-003	1.2300e-003	0.0133	3.0000e-005	2.8500e-003	3.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.8000e-004	0.0000	2.8309	2.8309	1.1000e-004	0.0000	2.8335
Total	**0.0171**	**0.5222**	**0.1207**	**1.2900e-003**	**0.0297**	**1.9600e-003**	**0.0316**	**8.1200e-003**	**1.8700e-003**	**9.9900e-003**	**0.0000**	**125.8777**	**125.8777**	**8.7900e-003**	**0.0000**	**126.0973**

3.3 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.3000e-004	0.0000	4.3000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0390	0.4757	0.2411	7.3000e-004		0.0190	0.0190		0.0175	0.0175	0.0000	67.0051	67.0051	0.0209	0.0000	67.5266
Total	**0.0390**	**0.4757**	**0.2411**	**7.3000e-004**	**4.3000e-004**	**0.0190**	**0.0194**	**5.0000e-005**	**0.0175**	**0.0175**	**0.0000**	**67.0051**	**67.0051**	**0.0209**	**0.0000**	**67.5266**

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	5.2000e-004	0.0174	3.5800e-003	4.0000e-005	8.9000e-004	6.0000e-005	9.6000e-004	2.5000e-004	6.0000e-005	3.1000e-004	0.0000	4.1016	4.1016	2.9000e-004	0.0000	4.1088
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	8.6000e-004	7.4000e-004	7.9500e-003	2.0000e-005	1.7100e-003	2.0000e-005	1.7200e-003	4.5000e-004	1.0000e-005	4.7000e-004	0.0000	1.6985	1.6985	6.0000e-005	0.0000	1.7001
Total	**1.3800e-003**	**0.0181**	**0.0115**	**6.0000e-005**	**2.6000e-003**	**8.0000e-005**	**2.6800e-003**	**7.0000e-004**	**7.0000e-005**	**7.8000e-004**	**0.0000**	**5.8001**	**5.8001**	**3.5000e-004**	**0.0000**	**5.8089**

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					1.7000e-004	0.0000	1.7000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0390	0.4757	0.2411	7.3000e-004		0.0190	0.0190		0.0175	0.0175	0.0000	67.0050	67.0050	0.0209	0.0000	67.5265
Total	**0.0390**	**0.4757**	**0.2411**	**7.3000e-004**	**1.7000e-004**	**0.0190**	**0.0192**	**2.0000e-005**	**0.0175**	**0.0175**	**0.0000**	**67.0050**	**67.0050**	**0.0209**	**0.0000**	**67.5265**

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	5.2000e-004	0.0174	3.5800e-003	4.0000e-005	8.9000e-004	6.0000e-005	9.6000e-004	2.5000e-004	6.0000e-005	3.1000e-004	0.0000	4.1016	4.1016	2.9000e-004	0.0000	4.1088
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	8.6000e-004	7.4000e-004	7.9500e-003	2.0000e-005	1.7100e-003	2.0000e-005	1.7200e-003	4.5000e-004	1.0000e-005	4.7000e-004	0.0000	1.6985	1.6985	6.0000e-005	0.0000	1.7001
Total	**1.3800e-003**	**0.0181**	**0.0115**	**6.0000e-005**	**2.6000e-003**	**8.0000e-005**	**2.6800e-003**	**7.0000e-004**	**7.0000e-005**	**7.8000e-004**	**0.0000**	**5.8001**	**5.8001**	**3.5000e-004**	**0.0000**	**5.8089**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.1400e-003	0.0000	2.1400e-003	3.1000e-004	0.0000	3.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0632	0.6841	0.5049	1.0200e-003		0.0309	0.0309		0.0285	0.0285	0.0000	90.4809	90.4809	0.0282	0.0000	91.1854
Total	**0.0632**	**0.6841**	**0.5049**	**1.0200e-003**	**2.1400e-003**	**0.0309**	**0.0331**	**3.1000e-004**	**0.0285**	**0.0288**	**0.0000**	**90.4809**	**90.4809**	**0.0282**	**0.0000**	**91.1854**

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	0.0256	0.8545	0.1815	2.1400e-003	0.0464	3.0600e-003	0.0495	0.0127	2.9300e-003	0.0157	0.0000	210.2451	210.2451	0.0148	0.0000	210.6157
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	2.2500e-003	1.8800e-003	0.0204	5.0000e-005	4.9300e-003	4.0000e-005	4.9700e-003	1.3100e-003	4.0000e-005	1.3500e-003	0.0000	4.7401	4.7401	1.6000e-004	0.0000	4.7442
Total	**0.0279**	**0.8564**	**0.2019**	**2.1900e-003**	**0.0513**	**3.1000e-003**	**0.0544**	**0.0141**	**2.9700e-003**	**0.0170**	**0.0000**	**214.9852**	**214.9852**	**0.0150**	**0.0000**	**215.3599**

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					8.3000e-004	0.0000	8.3000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0632	0.6841	0.5049	1.0200e-003		0.0309	0.0309		0.0285	0.0285	0.0000	90.4808	90.4808	0.0282	0.0000	91.1853
Total	**0.0632**	**0.6841**	**0.5049**	**1.0200e-003**	**8.3000e-004**	**0.0309**	**0.0318**	**1.2000e-004**	**0.0285**	**0.0286**	**0.0000**	**90.4808**	**90.4808**	**0.0282**	**0.0000**	**91.1853**

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	0.0256	0.8545	0.1815	2.1400e-003	0.0464	3.0600e-003	0.0495	0.0127	2.9300e-003	0.0157	0.0000	210.2451	210.2451	0.0148	0.0000	210.6157
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	2.2500e-003	1.8800e-003	0.0204	5.0000e-005	4.9300e-003	4.0000e-005	4.9700e-003	1.3100e-003	4.0000e-005	1.3500e-003	0.0000	4.7401	4.7401	1.6000e-004	0.0000	4.7442
Total	**0.0279**	**0.8564**	**0.2019**	**2.1900e-003**	**0.0513**	**3.1000e-003**	**0.0544**	**0.0141**	**2.9700e-003**	**0.0170**	**0.0000**	**214.9852**	**214.9852**	**0.0150**	**0.0000**	**215.3599**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0555	0.4365	0.4349	7.2000e-004		0.0285	0.0285		0.0282	0.0282	0.0000	62.3288	62.3288	5.4000e-003	0.0000	62.4639
Total	**0.0555**	**0.4365**	**0.4349**	**7.2000e-004**		**0.0285**	**0.0285**		**0.0282**	**0.0282**	**0.0000**	**62.3288**	**62.3288**	**5.4000e-003**	**0.0000**	**62.4639**

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	2.0600e-003	0.0576	0.0158	1.3000e-004	3.0700e-003	3.6000e-004	3.4300e-003	8.9000e-004	3.5000e-004	1.2300e-003	0.0000	12.1907	12.1907	8.1000e-004	0.0000	12.2110
Worker	3.5200e-003	2.9300e-003	0.0319	8.0000e-005	7.6900e-003	7.0000e-005	7.7600e-003	2.0400e-003	6.0000e-005	2.1100e-003	0.0000	7.3946	7.3946	2.5000e-004	0.0000	7.4009
Total	**5.5800e-003**	**0.0605**	**0.0476**	**2.1000e-004**	**0.0108**	**4.3000e-004**	**0.0112**	**2.9300e-003**	**4.1000e-004**	**3.3400e-003**	**0.0000**	**19.5852**	**19.5852**	**1.0600e-003**	**0.0000**	**19.6119**

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	0.0555	0.4365	0.4349	7.2000e-004		0.0285	0.0285		0.0282	0.0282	0.0000	62.3287	62.3287	5.4000e-003	0.0000	62.4638
Total	**0.0555**	**0.4365**	**0.4349**	**7.2000e-004**		**0.0285**	**0.0285**		**0.0282**	**0.0282**	**0.0000**	**62.3287**	**62.3287**	**5.4000e-003**	**0.0000**	**62.4638**

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	2.0600e-003	0.0576	0.0158	1.3000e-004	3.0700e-003	3.6000e-004	3.4300e-003	8.9000e-004	3.5000e-004	1.2300e-003	0.0000	12.1907	12.1907	8.1000e-004	0.0000	12.2110
Worker	3.5200e-003	2.9300e-003	0.0319	8.0000e-005	7.6900e-003	7.0000e-005	7.7600e-003	2.0400e-003	6.0000e-005	2.1100e-003	0.0000	7.3946	7.3946	2.5000e-004	0.0000	7.4009
Total	**5.5800e-003**	**0.0605**	**0.0476**	**2.1000e-004**	**0.0108**	**4.3000e-004**	**0.0112**	**2.9300e-003**	**4.1000e-004**	**3.3400e-003**	**0.0000**	**19.5852**	**19.5852**	**1.0600e-003**	**0.0000**	**19.6119**

3.5 Building Construction - 2020

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	0.1504	1.2024	1.2980	2.1700e-003		0.0739	0.0739		0.0733	0.0733	0.0000	186.7244	186.7244	0.0150	0.0000	187.0989
Total	**0.1504**	**1.2024**	**1.2980**	**2.1700e-003**		**0.0739**	**0.0739**		**0.0733**	**0.0733**	**0.0000**	**186.7244**	**186.7244**	**0.0150**	**0.0000**	**187.0989**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.3000e-003	0.1585	0.0429	3.8000e-004	9.2100e-003	7.4000e-004	9.9500e-003	2.6600e-003	7.1000e-004	3.3600e-003	0.0000	36.3323	36.3323	2.3100e-003	0.0000	36.3901
Worker	9.7200e-003	7.8400e-003	0.0867	2.4000e-004	0.0231	2.0000e-004	0.0233	6.1300e-003	1.8000e-004	6.3100e-003	0.0000	21.5096	21.5096	6.8000e-004	0.0000	21.5266
Total	**0.0150**	**0.1663**	**0.1296**	**6.2000e-004**	**0.0323**	**9.4000e-004**	**0.0332**	**8.7900e-003**	**8.9000e-004**	**9.6700e-003**	**0.0000**	**57.8420**	**57.8420**	**2.9900e-003**	**0.0000**	**57.9166**

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	0.1504	1.2024	1.2980	2.1700e-003		0.0739	0.0739		0.0733	0.0733	0.0000	186.7242	186.7242	0.0150	0.0000	187.0987
Total	**0.1504**	**1.2024**	**1.2980**	**2.1700e-003**		**0.0739**	**0.0739**		**0.0733**	**0.0733**	**0.0000**	**186.7242**	**186.7242**	**0.0150**	**0.0000**	**187.0987**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.3000e-003	0.1585	0.0429	3.8000e-004	9.2100e-003	7.4000e-004	9.9500e-003	2.6600e-003	7.1000e-004	3.3600e-003	0.0000	36.3323	36.3323	2.3100e-003	0.0000	36.3901
Worker	9.7200e-003	7.8400e-003	0.0867	2.4000e-004	0.0231	2.0000e-004	0.0233	6.1300e-003	1.8000e-004	6.3100e-003	0.0000	21.5096	21.5096	6.8000e-004	0.0000	21.5266
Total	**0.0150**	**0.1663**	**0.1296**	**6.2000e-004**	**0.0323**	**9.4000e-004**	**0.0332**	**8.7900e-003**	**8.9000e-004**	**9.6700e-003**	**0.0000**	**57.8420**	**57.8420**	**2.9900e-003**	**0.0000**	**57.9166**

3.6 Paving - 2020

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	7.9800e-003	0.0824	0.0975	1.6000e-004		4.1200e-003	4.1200e-003		3.7900e-003	3.7900e-003	0.0000	13.7685	13.7685	4.4500e-003	0.0000	13.8798
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.9800e-003**	**0.0824**	**0.0975**	**1.6000e-004**		**4.1200e-003**	**4.1200e-003**		**3.7900e-003**	**3.7900e-003**	**0.0000**	**13.7685**	**13.7685**	**4.4500e-003**	**0.0000**	**13.8798**

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	1.2000e-003	9.7000e-004	0.0107	3.0000e-005	2.8500e-003	2.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.8000e-004	0.0000	2.6555	2.6555	8.0000e-005	0.0000	2.6576
Total	**1.2000e-003**	**9.7000e-004**	**0.0107**	**3.0000e-005**	**2.8500e-003**	**2.0000e-005**	**2.8700e-003**	**7.6000e-004**	**2.0000e-005**	**7.8000e-004**	**0.0000**	**2.6555**	**2.6555**	**8.0000e-005**	**0.0000**	**2.6576**

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	7.9800e-003	0.0824	0.0975	1.6000e-004		4.1200e-003	4.1200e-003		3.7900e-003	3.7900e-003	0.0000	13.7685	13.7685	4.4500e-003	0.0000	13.8798
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.9800e-003**	**0.0824**	**0.0975**	**1.6000e-004**		**4.1200e-003**	**4.1200e-003**		**3.7900e-003**	**3.7900e-003**	**0.0000**	**13.7685**	**13.7685**	**4.4500e-003**	**0.0000**	**13.8798**

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	1.2000e-003	9.7000e-004	0.0107	3.0000e-005	2.8500e-003	2.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.8000e-004	0.0000	2.6555	2.6555	8.0000e-005	0.0000	2.6576
Total	**1.2000e-003**	**9.7000e-004**	**0.0107**	**3.0000e-005**	**2.8500e-003**	**2.0000e-005**	**2.8700e-003**	**7.6000e-004**	**2.0000e-005**	**7.8000e-004**	**0.0000**	**2.6555**	**2.6555**	**8.0000e-005**	**0.0000**	**2.6576**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3100					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1549	0.1685	2.7000e-004		0.0102	0.0102		0.0102	0.0102	0.0000	23.4899	23.4899	1.8200e-003	0.0000	23.5354
Total	**0.3322**	**0.1549**	**0.1685**	**2.7000e-004**		**0.0102**	**0.0102**		**0.0102**	**0.0102**	**0.0000**	**23.4899**	**23.4899**	**1.8200e-003**	**0.0000**	**23.5354**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4000e-003	2.7400e-003	0.0303	8.0000e-005	8.0700e-003	7.0000e-005	8.1300e-003	2.1400e-003	6.0000e-005	2.2100e-003	0.0000	7.5171	7.5171	2.4000e-004	0.0000	7.5231
Total	**3.4000e-003**	**2.7400e-003**	**0.0303**	**8.0000e-005**	**8.0700e-003**	**7.0000e-005**	**8.1300e-003**	**2.1400e-003**	**6.0000e-005**	**2.2100e-003**	**0.0000**	**7.5171**	**7.5171**	**2.4000e-004**	**0.0000**	**7.5231**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3100					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1549	0.1685	2.7000e-004		0.0102	0.0102		0.0102	0.0102	0.0000	23.4899	23.4899	1.8200e-003	0.0000	23.5354
Total	**0.3322**	**0.1549**	**0.1685**	**2.7000e-004**		**0.0102**	**0.0102**		**0.0102**	**0.0102**	**0.0000**	**23.4899**	**23.4899**	**1.8200e-003**	**0.0000**	**23.5354**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4000e-003	2.7400e-003	0.0303	8.0000e-005	8.0700e-003	7.0000e-005	8.1300e-003	2.1400e-003	6.0000e-005	2.2100e-003	0.0000	7.5171	7.5171	2.4000e-004	0.0000	7.5231
Total	**3.4000e-003**	**2.7400e-003**	**0.0303**	**8.0000e-005**	**8.0700e-003**	**7.0000e-005**	**8.1300e-003**	**2.1400e-003**	**6.0000e-005**	**2.2100e-003**	**0.0000**	**7.5171**	**7.5171**	**2.4000e-004**	**0.0000**	**7.5231**

3.8 Drainage/Utilities/Trenching - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0266	0.2490	0.1966	2.6000e-004		0.0180	0.0180		0.0166	0.0166	0.0000	23.1443	23.1443	7.3200e-003	0.0000	23.3274
Total	**0.0266**	**0.2490**	**0.1966**	**2.6000e-004**		**0.0180**	**0.0180**		**0.0166**	**0.0166**	**0.0000**	**23.1443**	**23.1443**	**7.3200e-003**	**0.0000**	**23.3274**

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	1.3300e-003	1.1100e-003	0.0120	3.0000e-005	2.9000e-003	3.0000e-005	2.9300e-003	7.7000e-004	2.0000e-005	7.9000e-004	0.0000	2.7914	2.7914	1.0000e-004	0.0000	2.7938
Total	**1.3300e-003**	**1.1100e-003**	**0.0120**	**3.0000e-005**	**2.9000e-003**	**3.0000e-005**	**2.9300e-003**	**7.7000e-004**	**2.0000e-005**	**7.9000e-004**	**0.0000**	**2.7914**	**2.7914**	**1.0000e-004**	**0.0000**	**2.7938**

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	0.0266	0.2490	0.1966	2.6000e-004		0.0180	0.0180		0.0166	0.0166	0.0000	23.1443	23.1443	7.3200e-003	0.0000	23.3274
Total	**0.0266**	**0.2490**	**0.1966**	**2.6000e-004**		**0.0180**	**0.0180**		**0.0166**	**0.0166**	**0.0000**	**23.1443**	**23.1443**	**7.3200e-003**	**0.0000**	**23.3274**

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	1.3300e-003	1.1100e-003	0.0120	3.0000e-005	2.9000e-003	3.0000e-005	2.9300e-003	7.7000e-004	2.0000e-005	7.9000e-004	0.0000	2.7914	2.7914	1.0000e-004	0.0000	2.7938
Total	**1.3300e-003**	**1.1100e-003**	**0.0120**	**3.0000e-005**	**2.9000e-003**	**3.0000e-005**	**2.9300e-003**	**7.7000e-004**	**2.0000e-005**	**7.9000e-004**	**0.0000**	**2.7914**	**2.7914**	**1.0000e-004**	**0.0000**	**2.7938**

3.9 Foundations/Concrete Pouring - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1098	0.8829	0.8693	1.4100e-003		0.0570	0.0570		0.0558	0.0558	0.0000	120.8933	120.8933	0.0157	0.0000	121.2853
Total	**0.1098**	**0.8829**	**0.8693**	**1.4100e-003**		**0.0570**	**0.0570**		**0.0558**	**0.0558**	**0.0000**	**120.8933**	**120.8933**	**0.0157**	**0.0000**	**121.2853**

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	0.0122	0.3404	0.0931	7.4000e-004	0.0182	2.1400e-003	0.0203	5.2400e-003	2.0500e-003	7.2900e-003	0.0000	72.0686	72.0686	4.8100e-003	0.0000	72.1889
Worker	5.2500e-003	4.3800e-003	0.0476	1.2000e-004	0.0115	1.0000e-004	0.0116	3.0500e-003	9.0000e-005	3.1400e-003	0.0000	11.0392	11.0392	3.8000e-004	0.0000	11.0487
Total	**0.0175**	**0.3448**	**0.1407**	**8.6000e-004**	**0.0296**	**2.2400e-003**	**0.0319**	**8.2900e-003**	**2.1400e-003**	**0.0104**	**0.0000**	**83.1078**	**83.1078**	**5.1900e-003**	**0.0000**	**83.2375**

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	0.1098	0.8829	0.8693	1.4100e-003		0.0570	0.0570		0.0558	0.0558	0.0000	120.8932	120.8932	0.0157	0.0000	121.2851
Total	**0.1098**	**0.8829**	**0.8693**	**1.4100e-003**		**0.0570**	**0.0570**		**0.0558**	**0.0558**	**0.0000**	**120.8932**	**120.8932**	**0.0157**	**0.0000**	**121.2851**

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	0.0122	0.3404	0.0931	7.4000e-004	0.0182	2.1400e-003	0.0203	5.2400e-003	2.0500e-003	7.2900e-003	0.0000	72.0686	72.0686	4.8100e-003	0.0000	72.1889
Worker	5.2500e-003	4.3800e-003	0.0476	1.2000e-004	0.0115	1.0000e-004	0.0116	3.0500e-003	9.0000e-005	3.1400e-003	0.0000	11.0392	11.0392	3.8000e-004	0.0000	11.0487
Total	**0.0175**	**0.3448**	**0.1407**	**8.6000e-004**	**0.0296**	**2.2400e-003**	**0.0319**	**8.2900e-003**	**2.1400e-003**	**0.0104**	**0.0000**	**83.1078**	**83.1078**	**5.1900e-003**	**0.0000**	**83.2375**

Appendix B
Project Operational Emissions

253 Los Robles Last Updated 3/12/2018
Air Quality and Greenhouse Gas Assessment

Table 1. Land Use and California Emissions Estimator Model (CalEEMod) Inputs

Land Use	CalEEMod Land Use Type	CalEEMod Land Use SubType	Value	Unit	Value	Unit
Existing						
Office Building	Commercial	General Office Building	43.54	ksf	43,544	sf
Landscaping			4.58	ksf	4,580	sf
Parking	Parking		124.00	spaces		

Proposed Project	CalEEMod Land Use Type	CalEEMod Land Use SubType	Value	Unit	Value	Unit
Residential						
Condominiums	**Residential**	**High-Rise Condo/Townhouse Rise**	**92**	**DU**	**94,165**	**sf**
One Bedroom			58	DU		
Two Bedroom			26	DU		
Gym	**Recreational**	**Health Club**	**2**	**ksf**	**1,699**	**sf**
Landscaping	**Recreational**	**City Park**	**16**	**ksf**	**15,546**	**sf**
Open Space	**Parking**	**Other Non-Asphalt Surfaces**	**22**	**ksf**	**22,320**	**sf**
Private Balconies	**Parking**	Other Non-Asphalt Surfaces	7	ksf	6,938	sf
Common Open Space			15	ksf	15,382	sf
Courtyard	**Parking**	Other Non-Asphalt Surfaces	2	ksf	2,432	sf
Additional Front Yard	**Parking**	Other Non-Asphalt Surfaces	1	ksf	963	sf
North Yard	**Parking**	Other Non-Asphalt Surfaces	3	ksf	3,051	sf
Patio Easement	**Parking**	Other Non-Asphalt Surfaces	2	ksf	2,251	sf
South Yard	**Parking**	Other Non-Asphalt Surfaces	3	ksf	2,556	sf
6th-Floor East Terrace	**Parking**	Other Non-Asphalt Surfaces	2	ksf	2,037	sf
6th-Floor Sundeck	**Parking**	Other Non-Asphalt Surfaces	2	ksf	2,092	sf
Parking	**Parking**	**Enclosed Parking Structure with Elevator**	**131**	**spaces**	**69,668**	**sf**
Basement 1	**Parking**	Enclosed Parking Structure with Elevator	41	spaces	23,157	sf
Basement 2	**Parking**	Enclosed Parking Structure with Elevator	43	spaces	23,158	sf
Basement 3	**Parking**	Enclosed Parking Structure with Elevator	47	spaces	23,353	sf

CALEEMOD INPUT SUMMARY	CalEEMod Land Use Type	CalEEMod Land Use SubType	Value	Unit	Value	Unit	Acreage
Condominiums	**Residential**	**High-Rise Condo/Townhouse Rise**	**92**	**DU**	**92,466**	**sf**	**0.35**
Health Club	**Recreational**	**Health Club**	**2**	**ksf**	**1,699**	**sf**	**0.1**
Other Non-Asphalt Surfaces	**Parking**	**Other Non-Asphalt Surfaces**	**22**	**ksf**	**22,320**	**sf**	**0.115**
Enclosed Parking Structure with Elevator	**Parking**	**Enclosed Parking Structure with Elevator**	**131**	**spaces**	**69,668**	**sf**	**0.25**
						Total	**0.815**

Source: Odyssey Development Services, 2018. ESA, 2018.

253 S Los Robles
Air Quality and Greenhouse Gas Assessment
Quantifying Greenhouse Gas Mitigation Measures - Transportation (Based on CAPCOA Guidance (August 2010))

PROJECT

Location Type	Global % VMT Reduction Cap	Location Type	Global % VMT Reduction Cap
Urban:	75%	***Suburban Center:***	20%
Less than 5 miles from central business district		Typically 20 miles or more from central business district	
Jobs-rich (jobs/housing ratio greater than 1.5)		Balanced jobs-housing	
Typical buildings are 6 stories or higher		Typical buildings are 2 stories	
Grid street pattern		Grid street pattern	
Minimal setbacks		Setbacks 0 - 20 feet	
Parking constrained on- and off-street		Parking somewhat constrained on-street; ample off-street	
Parking prices high/highest in the region		Parking prices low (if priced at all)	
High-quality rail; bus service at 10 min or less in peak hours		Bus service at 20 - 30 min and/or commuter rail station	
Compact Infill:	40%	***Suburban:***	15%
Typically 5 - 15 miles from central business district		Typically 20 miles or more from central business district	
Balanced jobs-housing (jobs/housing ratio from 0.9 to 1.2)		Housing-rich	
Typical buildings are 2 - 4 stories		Typical buildings are 1 - 2 stories	
Grid street pattern		Curvilinear street pattern (cul-de-sac based)	
Setbacks 0 - 20 feet		Parking between street and buildings; large lot residential	
Parking constrained		Parking ample; largely surface lot-based	
Parking prices low/moderate		No parking prices	
Rail w/in 2 miles; bus service at 15 min or less in peak hours		Limited bus service at 30 minute headways or more	

			Total Global Transportation VMT Reduction =	**33.29%** Cap: 75%
			(Includes double counting correction.)	
			Total LUT/SDT/PDT/TST VMT Reduction =	**33.29%** Cap: 70%
Land Use/Location Transportation Measures (65% Reduction Cap)			**Total LUT % VMT Reduction =**	**31.93%** Cap: 65%
LUT-1	Increase Density	% VMT Reduction = A × B [not to exceed 30%]	% VMT Reduction =	0.35% Cap: 30%
		A (housing) = (Number of DU/acre - 7.6) / 7.6	Number of DU/acre:	112.9 A = 500%
		A (jobs) = (Number of Jobs/acre - 20) / 20	Number of Jobs/acre:	- A = 0%
		B = 0.07%		
LUT-2	Increase Location Efficiency	% VMT Reduction Cap for all LUT measures	Urban LUT % VMT Reduction Cap:	65%
			Compact Infill LUT % VMT Reduction Cap:	30%
			Suburban Center LUT % VMT Reduction Cap:	10%
LUT-3	Increase Diversity of Urban and Suburban Developments (Mixed Use)	% VMT Reduction = Land Use × B [not to exceed 30%]	% VMT Reduction =	0.00% Cap: 30%
		Land Use = % increase in land use index vs. single use		
		= (Land Use Index - 0.15) / 0.15	Single family sqft:	- a_1 = -
Urban: The urban project will be predominantly characterized by properties on which various uses, such as office, commercial, institutional, and residential, are combined in a single building or on a single site in an integrated development project with functional interrelationships and a coherent physical design.		Land Use Index = -a / ln(6)	Multi-family sqft:	- a_2 = -
		$a = \sum a_i \times \ln(a_i)$	Commercial sqft:	- a_3 = -
		a_i = building floor area / total square feet of area considered	Industrial sqft:	- a_4 = -
		a_1 = single family	Institutional sqft:	- a_5 = -
Suburban: The suburban project will have at least three uses of the following on site and/or offsite within ½ mile: Residential Development, Retail Development		a_2 = multi-family	Park sqft:	- a_6 = -

	Site and/or offsite within ¼-mile: Residential Development, Retail Development, Park, Open Space, or Office. **(ACOUNTED FOR IN TRAFFIC STUDY)**	a_3 = commercial a_4 = industrial a_5 = institutional a_6 = park	B = 0.09	Total sqft: - (Note: If a_i = 0, then set a_i = 0.00000
LUT-4	Increase Destination Accessibility	% VMT Reduction = Center Distance × B [not to exceed 20%] Center Distance = (12 - Miles to downtown or job center) / 12 B = 0.20		% VMT Reduction = 0.00% Cap: 20% Miles to downtown or job center: 11.5 (Average distance to: Beverly Hills, Century City, Hollywood and Downtown L.A. These locations are identified as job centers by Metro and by SCAG.) (Note: Only effective for 8 miles or l
LUT-5	Increase Transit Accessibility **(ACOUNTED FOR IN TRAFFIC STUDY)**	% VMT Reduction = Transit × B [not to exceed 30%] Transit = % project transit - % typical ITE transit % project transit = -50x + 38 [where x = 0 - 0.5 miles to transit] -4.4x + 15.2 [where x = 0.5 - 3 miles to transit] % typical ITE transit = 1.3% B = 0.67		% VMT Reduction = 12.86% Cap: 30% Miles to transit: 0.35 (Note: Only effective for 3 miles or l
LUT-6	Integrated Affordable and Below Market Rate Housing	% VMT Reduction = 4% × % units BMR		% VMT Reduction = 0.35% % of units below market rate: 8.7% (Note: Only effective up to 30%)

LUT-7	Orient Project Toward Non-Auto Corridor	Not quantified separately; Assumed to be included in LUT-3 (If included in LUT-3, VMT reduction should be at least 0.5% per 1% inprovement in transit frequency and 0.5% per 10% increase in transit ridership)	
LUT-8	Locate Project near Bike Path/Bike Lanes	Not quantified separately; Assumed to be included in LUT-4 (If included in LUT-4, VMT reduction should be at least 0.625%)	
LUT-9	Improve Design of Development	% VMT Reduction = Intersections × B Intersections = % increase vs. typical ITE suburban = (Intersections per square mile of project - 36) / 36 B = 0.12	% VMT Reduction = 21.33% Intersections per square mile: 100 (Estimated based on count of 4-way intersections within 1 mile radius of project site.) (Note: Only effective up to 100)

Neighborhood/Site Enhancement Measures (5% Reduction Cap without NEV; 15% Reduction Cap with NEV)

Total SDT % VMT Reduction = 2.00%

Cap: 5%
Cap: 15%

SDT-1	Provide Pedestrian Network Improvements	VMT reduction based on urban/rural context and pedestrian accomodations	% VMT Reduction = 2.00% Pedestrian network on-site and connecting off-site (urban/suburban): X — 2% Pedestrian network on-site (urban/suburban): 1% (Mark an "X" in one of the above)
SDT-2	Provide Traffic Calming Measures	Marked crosswalks, count-down signal timers, curb extensions, speed tables, rasied crosswalks, raised intersections, median islands, tight corner radii, roundabouts, on-street parking, planter strips with trees, chicanes/chokers, and others.	% VMT Reduction = 0.00% 25% of streets with improvements: A 50% of streets with improvements: B 75% of streets with improvements: C 100% of streets with improvements: D 25% of intersctions with improvements: W 50% of intersctions with improvements: X 75% of intersctions with improvements: Y 100% of intersctions with improvements: Z % of intersections (Mark an "X" in one of the above fo
SDT-3	Neighborhood Electric Vehicle Network	% VMT Reduction = Pop × Number × NEV Pop × Number = NEVs per household [0.04 to 1.0] NEV = VMT reduction rate per household [12.7%]	% VMT Reduction = 0.00% Low NEVs per Household: 0.04 High NEVs per Household: 1.0 (Mark an "X" in one of the above)

SDT-4	Create Urban Non-Motorized Zones	Not quantified separately; Assumed to be included in SDT-1 (If included in SDT-1, VMT reduction should be at least 0.01% to 0.2%)
SDT-5	Incorporate Bike Lane Street Design	Not quantified separately; Assumed to be included in LUT-9 (If included in LUT-9, VMT reduction should be at least 1% of worker commute per additional mile of bike lanes per square mile)
SDT-6	Provide Bike Parking in Non-Residential Projects	Not quantified separately; Assumed to be included in LUT-9 (If included in LUT-9, VMT reduction should be at least 0.625%)
SDT-7	Provide Bike Parking in Multi-Unit Residential Projects	Not quantified separately; Assumed to be included in LUT-9
SDT-8	Provide Electric Vehicle Parking	Not quantified separately; Assumed to be included in SDT-3
SDT-9	Dedicated Land for Bike Trails	Not quantified separately; Assumed to be included in LUT-9

Parking Policy/Pricing (20% Reduction Cap)

Total PDT % VMT Reduction = **0.00%** Cap: 20%

PDT-1	Limit Parking Supply	% VMT Reduction = = (Actual Parking - ITE Parking) / ITE Parking × 0.5	% VMT Reduction = 0.00% Cap: 12.50% Actual Parking Spaces: - ITE Parking Spaces: -
PDT-2	Unbunble Parking Costs from Property	% VMT Reduction = Change in vehicle cost × elasticity × A Change in vehicle cost = Monthly parking cost × (12/$4000) Elasticity = 0.4 A = 85%	% VMT Reduction = 0.00% Cap: 13% Monthly parking cost: $ -
PDT-3	Implement Market Price Public Parking (On-Street)	% VMT Reduction = Park$ × B Park$ = Percent increase in on-street parking prices [minimum of 25%] B = 0.11	% VMT Reduction = 0.00% Cap: 5.5% Actual On-Street Parking Price: $ - Baseline On-Street Parking Price: $ -
PDT-4	Require Residential Area Parking Permits	Not quantified separately; Assumed to be included in PDT-1, -2-, and -3 (If included in LUT-9, VMT reduction should be at least 0.09% to 0.36% depending on land use)	

Transit System Improvements (10% Reduction Cap)

Total TST % VMT Reduction = **0.00%** Cap: 10%

TST-1	Provide a Bus Rapid Transit System	% VMT Reduction = Riders × Mode × Lines × D Riders = 28% Mode = 17% Urban Center 4% Urban 1.30% Suburban Lines = Percent of lines serving project converting to BRT D = 0.67	% VMT Reduction = 0.00% Cap: 3.2% Urban Center: 17% Urban: 4% Suburban: 1.30% (Mark an "X" in one of the above) Lines Converting to BRT: 0% Total Baseline Lines:
TST-2	Implement Transit Access Improvements	Not quantified separately; Assumed to be included in TST-3 and -4	
TST-3	Expand Transit Network	% VMT Reduction = Coverage × B × Mode × D Coverage = % increase in transit network coverage B = 0.65 Urban Center 0.72 Urban 1.01 Suburban Mode = 17% Urban Center 4% Urban 1.30% Suburban D = 0.67	% VMT Reduction = 0.00% Cap: 8.2% Urban Center: 17% 0.65 Urban: 4% 0.72 Suburban: 1.30% 1.01 (Mark an "X" in one of the above) Coverage:

TST-4	Increase Transit Service Frequency/Speed	% VMT Reduction = Headway × B × C × Mode × E			% VMT Reduction =	0.00%	Cap:	2.5%
		Headway = % reduction in headways [15% - 80%]						
		B =	0.32	Urban	Urban Center:		17%	0.32
			0.36	Suburban	Urban:		4%	0.32
		C =	50%	< 50% lines improved	Suburban:		1.30%	0.36
			85%	>= 50% lines improved				
		Mode =	17%	Urban Center		(Mark an "X" in one of the above)		
			4%	Urban				
			1.30%	Suburban	Headway:			
		E = 0.67			Percent of Lines Improved:			
TST-5	Provide Bike Parking Near Transit	Not quantified separately; Assumed to be included in TST-3 and -4						
TST-6	Provide Local Shuttles	Not quantified separately; Assumed to be included in TST-3 and -4						

Commute Trip Reduction (25% Reduction Cap - WORK VMT ONLY)

Total TRT % Work VMT Reduction =	**0.00%**	Cap:	25%
% Work VMT of Total VMT:	**2.5%**		
Total TRT % Overall VMT Reduction =	**0.00%**	Cap:	15%

TRT-1	Implement Voluntary Commute Trip Reduction Program	% Work VMT Reduction = A × B A = 6.2% Urban 5.4% Suburban Center 5.2% Suburban B = % employees eligible	% Work VMT Reduction =	0.00%	Cap:	6.2%
			Urban:	6.2%		
			Suburban Center:	5.4%		
			Suburban:	5.2%		
			(Mark an "X" in one of the above)			
			% Employees Eligible:			
TRT-2	Implement Required Commute Trip Reduction Program	% Work VMT Reduction = A × B A = 21% B = % employees eligible	% Work VMT Reduction =	0.00%	Cap:	21.0%
			% Employees Eligible:			
TRT-3	Provide Ride-Sharing Programs	% Work VMT Reduction = Commute × Employee Commute = 15% Urban 10% Suburban Center 5% Suburban Employee = % employees eligible	% Work VMT Reduction =	0.00%	Cap:	15.0%
			Urban:	15%		
			Suburban Center:	10%		
			Suburban:	5%		
			(Mark an "X" in one of the above)			
			% Employees Eligible:			
TRT-4	Implement Subsidized or Discounted Transit Program	% Work VMT Reduction = A × B × C A = % reduction in commute vehicle trips B = % employees eligible C = Adjustment from VT to VMT [1.0]	% Work VMT Reduction =	0.00%	Cap:	20.0%
			Urban:	A		
			Suburban Center:	B		
			Suburban:	C		
			Transit Subsidy: $0.75	W		
			Transit Subsidy: $1.49	X		
			Transit Subsidy: $2.98	Y		
			Transit Subsidy: $5.96	Z		
			(Mark an "X" in one of the above for			
			% Employees Eligible:			
TRT-5	Provide End of Trip Facilities	Not quantified separately; Assumed to be included in TRT-1 through -3 (If included, Work VMT reduction should be 2% to 5%, or total VMT reduction should be 0.02% to 0.625%)				

TRT-6	Encourage Telecommuting and Alternate Work Schedules	% Reduction in Commute VMT	% Work VMT Reduction = 0.00%	Cap: 5.5%
			9-day/80-hour Work Week:	A
			4-day/40-hour Work Week:	B
			Telecommuting 1.5 Days:	C
			Employee Participation: 1%	V
			Employee Participation: 3%	W
			Employee Participation: 5%	X
			Employee Participation: 10%	Y
			Employee Participation: 25%	Z
			(Mark an "X" in one of the above fo	
TRT-7	Implement Commute Trip Reduction Marketing	% Work VMT Reduction = A × B × C A = % reduction in commute vehicle trips [4%] B = % employees eligible C = Adjustment from VT to VMT [1.0]	% Work VMT Reduction = 0.00% % Employees Eligible:	Cap: 4.0%
TRT-8	Implement Preferential Permit Parking Program	Not quantified separately; Assumed to be included in TRT-1 through -3		
TRT-9	Implement Car-Sharing Program	% Work VMT Reduction = A × B / C A = % reduction in car-share member annual VMT [37%] B = number of car share members per shared car [20] C = 1,000 Urban 2,000 Suburban	% Work VMT Reduction = 0.00% Urban: 1,000 Suburban: 2,000 (Mark an "X" in one of the above)	Cap: 0.74%
TRT-10	Implement a School Pool Program	Not applicable.		
TRT-11	Provide Employer-Sponsored Vanpool/Shuttle	% Work VMT Reduction = A × B × C A = % shift in vanpool mode share of commute trips = 2% to 20% B = % employees eligible C = 0.67	% Work VMT Reduction = 0.00% A: Shift in Vanpool Mode Share: B: Employees Eligible:	Cap: 13.4%
TRT-12	Implement Bike Sharing Program	Not quantified separately; Assumed to be included in LUT-9 and SDT-5 (If included, total VMT reduction should be at least 0.03%)		
TRT-13	Implement School Bus Program	Not applicable.		
TRT-14	Price Workplace Parking	% Work VMT Reduction = A × B A = % reduction in commute VMT B = % employees subject to priced parking	% Work VMT Reduction = 0.00% Urban: A	Cap: 19.7%

Suburban Center:		B
Suburban:		C

Daily Parking Charge: $1		W
Daily Parking Charge: $2		X
Daily Parking Charge: $3		Y
Daily Parking Charge: $6		Z

(Mark an "X" in one of the above fo

% Employees Subject to Priced Parking:

TRT-15 Implement Employee Parking Cash-Out

% Work VMT Reduction = A × B

A = 7.7% Urban
4.5% Suburban Center
3.0% Suburban

B = % employees eligible

% Work VMT Reduction = 0.00% Cap: 7.7%

Urban:		7.7%
Suburban Center:		4.5%
Suburban:		3.0%

(Mark an "X" in one of the above)

% Employees Eligible:

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253 S Los Robles

Air Quality and Greenhouse Gas Assessment

Project Trips and Vehicle Miles Traveled

Land Use (CalEEMod Land Use)	Unit Amount	Daily Project Trips	
PROJECT			
Residential Condominiums/Townhouse	92 DU	5.81	Baseline trip rate per DU
		0.0%	Deductions (Traffic Study)
		5.81	**Trip rate per DU less Adjustments**
		-33.3%	VMT Reduction (CAPCOA)
		14.7	H-W Trip Length (Baseline)
		5.9	H-S Trip Length (Baseline)
		8.7	H-O Trip Length (Baseline)
		9.8	**H-W Trip Length (Project)**
		3.9	**H-S Trip Length (Project)**
		5.8	**H-O Trip Length (Project)**

Source: Pasadena Department of Transportation, 2018; ESA 2018.

253 S. Los Robles - Operations

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	131.00	Space	0.25	69,668.00	0
Other Non-Asphalt Surfaces	22.32	1000sqft	0.12	22,320.00	0
Health Club	1.70	1000sqft	0.10	1,699.00	0
Condo/Townhouse High Rise	92.00	Dwelling Unit	0.35	92,466.00	223

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2020
Utility Company	Pasadena Water & Power				
CO2 Intensity (lb/MWhr)	773.97	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - see operational assumptions

Land Use - see operational assumptions

Vehicle Trips - see operational assumptions

Woodstoves - see operational assumptions

Energy Use - Used lighting energy intensity from "parking lot" for other non-asphalt surfaces land use.

Construction Off-road Equipment Mitigation -

Energy Mitigation - see operational assumptions.

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblEnergyUse	LightingElect	0.00	0.35
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	78.20	0.00
tblFireplaces	NumberNoFireplace	9.20	0.00
tblFireplaces	NumberWood	4.60	0.00
tblLandUse	LandUseSquareFeet	52,400.00	69,668.00
tblLandUse	LandUseSquareFeet	1,700.00	1,699.00
tblLandUse	LandUseSquareFeet	92,000.00	92,466.00
tblLandUse	LotAcreage	1.18	0.25
tblLandUse	LotAcreage	0.51	0.12
tblLandUse	LotAcreage	0.04	0.10
tblLandUse	LotAcreage	1.44	0.35
tblLandUse	Population	263.00	223.00
tblProjectCharacteristics	CO2IntensityFactor	1664.14	773.97
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	HO_TL	8.70	5.80
tblVehicleTrips	HS_TL	5.90	3.90
tblVehicleTrips	HW_TL	14.70	9.80
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PR_TP	52.00	0.00
tblVehicleTrips	ST_TR	4.31	5.81
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	SU_TR	3.43	5.81
tblVehicleTrips	SU_TR	26.73	0.00

tblVehicleTrips	WD_TR	4.18	5.81
tblVehicleTrips	WD_TR	32.93	0.00
tblWoodstoves	NumberCatalytic	4.60	0.00
tblWoodstoves	NumberNoncatalytic	4.60	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

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	0.4064	0.0110	0.9539	5.0000e-005		5.2400e-003	5.2400e-003		5.2400e-003	5.2400e-003	0.0000	1.5536	1.5536	1.5200e-003	0.0000	1.5917
Energy	5.6100e-003	0.0481	0.0211	3.1000e-004		3.8800e-003	3.8800e-003		3.8800e-003	3.8800e-003	0.0000	347.5373	347.5373	0.0120	3.2800e-003	348.8154
Mobile	0.1638	0.7898	1.9613	6.0300e-003	0.4618	6.3000e-003	0.4681	0.1238	5.9000e-003	0.1297	0.0000	556.4256	556.4256	0.0325	0.0000	557.2383
Waste						0.0000	0.0000		0.0000	0.0000	10.5576	0.0000	10.5576	0.6239	0.0000	26.1559
Water						0.0000	0.0000		0.0000	0.0000	1.9336	42.8399	44.7735	0.2002	5.0200e-003	51.2749
Total	**0.5758**	**0.8489**	**2.9363**	**6.3900e-003**	**0.4618**	**0.0154**	**0.4773**	**0.1238**	**0.0150**	**0.1388**	**12.4911**	**948.3564**	**960.8476**	**0.8702**	**8.3000e-003**	**985.0762**

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	0.4064	0.0110	0.9539	5.0000e-005		5.2400e-003	5.2400e-003		5.2400e-003	5.2400e-003	0.0000	1.5536	1.5536	1.5200e-003	0.0000	1.5917
Energy	5.4900e-003	0.0470	0.0206	3.0000e-004		3.7900e-003	3.7900e-003		3.7900e-003	3.7900e-003	0.0000	340.9434	340.9434	0.0118	3.2200e-003	342.1969
Mobile	0.1638	0.7898	1.9613	6.0300e-003	0.4618	6.3000e-003	0.4681	0.1238	5.9000e-003	0.1297	0.0000	556.4256	556.4256	0.0325	0.0000	557.2383
Waste						0.0000	0.0000		0.0000	0.0000	2.8505	0.0000	2.8505	0.1685	0.0000	7.0621
Water						0.0000	0.0000		0.0000	0.0000	1.7371	39.0956	40.8327	0.1799	4.5200e-003	46.6755
Total	**0.5756**	**0.8479**	**2.9359**	**6.3800e-003**	**0.4618**	**0.0153**	**0.4772**	**0.1238**	**0.0149**	**0.1387**	**4.5877**	**938.0181**	**942.6058**	**0.3942**	**7.7400e-003**	**954.7644**

	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	**0.02**	**0.12**	**0.02**	**0.16**	**0.00**	**0.58**	**0.02**	**0.00**	**0.60**	**0.06**	**63.27**	**1.09**	**1.90**	**54.70**	**6.75**	**3.08**

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	0.1638	0.7898	1.9613	6.0300e-003	0.4618	6.3000e-003	0.4681	0.1238	5.9000e-003	0.1297	0.0000	556.4256	556.4256	0.0325	0.0000	557.2383
Unmitigated	0.1638	0.7898	1.9613	6.0300e-003	0.4618	6.3000e-003	0.4681	0.1238	5.9000e-003	0.1297	0.0000	556.4256	556.4256	0.0325	0.0000	557.2383

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse High Rise	534.52	534.52	534.52	1,216,780	1,216,780
Enclosed Parking with Elevator	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	534.52	534.52	534.52	1,216,780	1,216,780

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
Condo/Townhouse High Rise	9.80	3.90	5.80	40.20	19.20	40.60	86	11	3
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	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
Condo/Townhouse High Rise	0.547726	0.045437	0.201480	0.122768	0.016614	0.006090	0.019326	0.029174	0.002438	0.002359	0.005005	0.000677	0.000907
Enclosed Parking with Elevator	0.547726	0.045437	0.201480	0.122768	0.016614	0.006090	0.019326	0.029174	0.002438	0.002359	0.005005	0.000677	0.000907
Health Club	0.547726	0.045437	0.201480	0.122768	0.016614	0.006090	0.019326	0.029174	0.002438	0.002359	0.005005	0.000677	0.000907
Other Non-Asphalt Surfaces	0.547726	0.045437	0.201480	0.122768	0.016614	0.006090	0.019326	0.029174	0.002438	0.002359	0.005005	0.000677	0.000907

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	286.5959	286.5959	0.0107	2.2200e-003	287.5264
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	291.9992	291.9992	0.0109	2.2600e-003	292.9473
NaturalGas Mitigated	5.4900e-003	0.0470	0.0206	3.0000e-004		3.7900e-003	3.7900e-003		3.7900e-003	3.7900e-003	0.0000	54.3475	54.3475	1.0400e-003	1.0000e-003	54.6704
NaturalGas Unmitigated	5.6100e-003	0.0481	0.0211	3.1000e-004		3.8800e-003	3.8800e-003		3.8800e-003	3.8800e-003	0.0000	55.5381	55.5381	1.0600e-003	1.0200e-003	55.8681

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					
Condo/Townhouse High Rise	1.00999e+006	5.4500e-003	0.0465	0.0198	3.0000e-004		3.7600e-003	3.7600e-003		3.7600e-003	3.7600e-003	0.0000	53.8971	53.8971	1.0300e-003	9.9000e-004	54.2173
Enclosed Parking with Elevator	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
Health Club	30751.9	1.7000e-004	1.5100e-003	1.2700e-003	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	1.6410	1.6410	3.0000e-005	3.0000e-005	1.6508
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
Total		**5.6200e-003**	**0.0481**	**0.0211**	**3.1000e-004**		**3.8700e-003**	**3.8700e-003**		**3.8700e-003**	**3.8700e-003**	**0.0000**	**55.5381**	**55.5381**	**1.0600e-003**	**1.0200e-003**	**55.8681**

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					
Condo/Townhouse High Rise	988818	5.3300e-003	0.0456	0.0194	2.9000e-004		3.6800e-003	3.6800e-003		3.6800e-003	3.6800e-003	0.0000	52.7671	52.7671	1.0100e-003	9.7000e-004	53.0807
Enclosed Parking with Elevator	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
Health Club	29615.5	1.6000e-004	1.4500e-003	1.2200e-003	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	1.5804	1.5804	3.0000e-005	3.0000e-005	1.5898
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
Total		**5.4900e-003**	**0.0470**	**0.0206**	**3.0000e-004**		**3.7900e-003**	**3.7900e-003**		**3.7900e-003**	**3.7900e-003**	**0.0000**	**54.3475**	**54.3475**	**1.0400e-003**	**1.0000e-003**	**54.6704**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Condo/Townhouse High Rise	396823	139.3113	5.2200e-003	1.0800e-003	139.7636
Enclosed Parking with Elevator	408254	143.3246	5.3700e-003	1.1100e-003	143.7900
Health Club	18858.9	6.6207	2.5000e-004	5.0000e-005	6.6422
Other Non-Asphalt Surfaces	7812	2.7425	1.0000e-004	2.0000e-005	2.7514
Total		**291.9992**	**0.0109**	**2.2600e-003**	**292.9473**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Condo/Townhouse High Rise	395001	138.6717	5.2000e-003	1.0800e-003	139.1219
Enclosed Parking with Elevator	394873	138.6267	5.1900e-003	1.0700e-003	139.0768
Health Club	18671.6	6.5550	2.5000e-004	5.0000e-005	6.5763
Other Non-Asphalt Surfaces	7812	2.7425	1.0000e-004	2.0000e-005	2.7514
Total		**286.5959**	**0.0107**	**2.2200e-003**	**287.5264**

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	0.4064	0.0110	0.9539	5.0000e-005		5.2400e-003	5.2400e-003		5.2400e-003	5.2400e-003	0.0000	1.5536	1.5536	1.5200e-003	0.0000	1.5917
Unmitigated	0.4064	0.0110	0.9539	5.0000e-005		5.2400e-003	5.2400e-003		5.2400e-003	5.2400e-003	0.0000	1.5536	1.5536	1.5200e-003	0.0000	1.5917

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	0.0310					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3462					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	0.0292	0.0110	0.9539	5.0000e-005		5.2400e-003	5.2400e-003		5.2400e-003	5.2400e-003	0.0000	1.5536	1.5536	1.5200e-003	0.0000	1.5917
Total	**0.4064**	**0.0110**	**0.9539**	**5.0000e-005**		**5.2400e-003**	**5.2400e-003**		**5.2400e-003**	**5.2400e-003**	**0.0000**	**1.5536**	**1.5536**	**1.5200e-003**	**0.0000**	**1.5917**

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	0.0310					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3462					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	0.0292	0.0110	0.9539	5.0000e-005		5.2400e-003	5.2400e-003		5.2400e-003	5.2400e-003	0.0000	1.5536	1.5536	1.5200e-003	0.0000	1.5917
Total	**0.4064**	**0.0110**	**0.9539**	**5.0000e-005**		**5.2400e-003**	**5.2400e-003**		**5.2400e-003**	**5.2400e-003**	**0.0000**	**1.5536**	**1.5536**	**1.5200e-003**	**0.0000**	**1.5917**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	40.8327	0.1799	4.5200e-003	46.6755
Unmitigated	44.7735	0.2002	5.0200e-003	51.2749

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Condo/Townhouse High Rise	5.99417 / 3.77893	44.0417	0.1969	4.9400e-003	50.4358
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	0.100543 / 0.0616233	0.7319	3.3000e-003	8.0000e-005	0.8391
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**44.7735**	**0.2002**	**5.0200e-003**	**51.2749**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Condo/Townhouse High Rise	5.38516 / 3.54842	40.1654	0.1769	4.4400e-003	45.9119
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	0.0903281 / 0.057864[illegible]	0.6673	2.9700e-003	7.0000e-005	0.7636
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**40.8327**	**0.1799**	**4.5100e-003**	**46.6755**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	2.8505	0.1685	0.0000	7.0621
Unmitigated	10.5576	0.6239	0.0000	26.1559

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Condo/Townhouse High Rise	42.32	8.5906	0.5077	0.0000	21.2828
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Health Club	9.69	1.9670	0.1163	0.0000	4.8731
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**10.5576**	**0.6239**	**0.0000**	**26.1559**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Condo/Townhouse High Rise	11.4264	2.3195	0.1371	0.0000	5.7464
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Health Club	2.6163	0.5311	0.0314	0.0000	1.3157
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**2.8506**	**0.1685**	**0.0000**	**7.0621**

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

Living in Pasadena

(/apartments/search/CA/Pasadena)

Walk Score 66

Bike Score 72

Pasadena has an average Walk Score of 66 with 137,122 residents.

Pasadena is very bikeable.

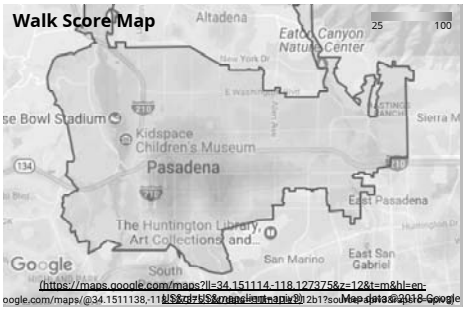
The most walkable Pasadena neighborhoods are Downtown (/CA/Pasadena/Downtown), South Lake (/CA/Pasadena/South_Lake) and Raymond Hill (/CA/Pasadena/Raymond_Hill).

Nearby Apartments (/apartments/search/CA/Pasadena)

View Pasadena apartments for rent (/apartments/search/CA/Pasadena) | View Pasadena homes for sale (https://www.redfin.com/city/14498/CA/Pasadena)

Walk Score 66 Pasadena is Somewhat Walkable

Some errands can be accomplished on foot.



Some errands can be accomplished on foot in Pasadena.

United States (/cities-and-neighborhoods/) California (/CA) **Pasadena (/CA/Pasadena)**

Pasadena Apartments for Rent

Pasadena Homes for Sale (http://www.redfin.com)

View all Pasadena apartments (/apartments/search/CA/Pasadena) on a map.

Acapella Pasadena (/score/ac...
1 bed Walk Score 90

Residences at Westgate (/scor...
Studio Walk Score 92

Arpeggio Pasadena (/score/ar...
1 bed Walk Score 88

The Encore (/score/3bd-2bh-sp...
2 bed Walk Score 90

Villas of Pasadena (/score/apa...
1 bed Walk Score 84

AVA Pasadena (/score/the-ma...
1 bed Walk Score 90

eaves Old Town Pasadena (/sc...
Studio Walk Score 85

Orange Grove Circle (/score/or...
2 bed Walk Score 45

Quick Links

List of Pasadena rentals (/apartments/featured/CA/Pasadena)
Dog friendly apartments Pasadena (/CA/Pasadena/dog-friendly-apartments)
Pet friendly apartments Pasadena (/CA/Pasadena/pet-friendly-apartments)
Hardwood floor apartments Pasadena (/CA/Pasadena/hardwood-floor-apartments)
Pool apartments Pasadena (/CA/Pasadena/pool-apartments)
Furnished apartments Pasadena (/CA/Pasadena/furnished-apartments)
Top floor apartments Pasadena (/CA/Pasadena/top-floor-apartments)
Single family apartments Pasadena (/CA/Pasadena/single-family-apartments)

Nearby Cities

Los Angeles Apartments (/CA/Los_Angeles) Glendale Apartments (/CA/Glendale) Fullerton Apartments (/CA/Fullerton) East Los Angeles Apartments (/CA/East_Los_Angeles) El Monte Apartments (/CA/El_Monte) Downey Apartments (/CA/Downey) Inglewood Apartments (/CA/Inglewood) West Covina Apartments (/CA/West_Covina) Norwalk Apartments (/CA/Norwalk) Burbank Apartments (/CA/Burbank)

Pasadena Neighborhoods

Rank	Name	Walk Score	Transit Score	Bike Score	Population
1	Downtown (/CA/Pasadena/Downtown)	88	-	94	16,017
2	South Lake (/CA/Pasadena/South_Lake)	87	-	91	5,354
3	Raymond Hill (/CA/Pasadena/Raymond_Hill)	87	-	92	719
4	Villa Parke (/CA/Pasadena/Villa_Parke)	80	-	93	7,834
5	The Oaks (/CA/Pasadena/The_Oaks)	79	-	89	3,768

See all Pasadena neighborhoods ▾

Eating & Drinking

There are about 700 restaurants, bars and coffee shops in Pasadena.

People in Pasadena can walk to an average of 4 restaurants, bars and coffee shops in 5 minutes.

Restaurant Choices Map ☐ = More Choices

The Arroyo Seco offers a wonderful array of experiences for walkers and hikers. The area is a welcome oasis from the urban hustle-and-bustle

Norma and Kyle - BLU DOT Realty Group on *Lower Arroyo Seco, Pasadena, Ca*

Pasadena has about 14 car shares from RelayRides and Zipcar.

Pasadena is Very Bikeable

Bike Score 72

Biking is convenient for most trips.

Bike Score

Bike Lanes

Hills

Bike Commuters


Central Park


Central Park


Central Park


Colorado Street Bridge, Pasadena, Ca

The Colorado Street Bridge is a historic concrete arch bridge spanning the Arroyo Seco in Pasadena, California. A magnificent bridge showcasing its awesome architecture. It's night lit lamp posts lights up the beautiful architecture all around it.

Norma and Kyle - BLU DOT Realty Group on *Colorado Street Bridge, Pasadena, Ca*


Cafe Alibi


Pasadena Memorial Park


Central Park


Memorial Park Station

Hiking pass the southern archery range which consists of 28 hay bale targets and 6 practice butts, the trail leads along the LA River's flood channel.

Norma and Kyle - BLU DOT Realty Group on *Arroyo Seco, Pasadena, Ca*

Pasadena is Talking About...

play blaze pizza coffee song food god drink school sleeping movies job california lunch pasadena city hall dinner read urth caffe walk eat car

Pasadena is all about:

Tweet @WalkScore

Incycle Bicycles

Pasadena Fire House 36

Color Me Mine

College & University Rentals

Art Center College of Design (/apartments/nearby/art-center-college-of-design-pasadena-ca)

California Institute of Technology (/apartments/nearby/california-institute-of-technology-pasadena-ca)

Pacific Oaks College (/apartments/nearby/pacific-oaks-college-pasadena-ca)

Apartments Near Parks

Hahamonga Watershed Natural Park (/apartments/nearby/hahamonga-watershed-natural-park-pasadena)

Eaton Canyon Park (/apartments/nearby/eaton-canyon-park-pasadena)

Oak Grove Park (/apartments/nearby/oak-grove-park-pasadena)

Brookside Park (/apartments/nearby/brookside-park-pasadena)

Victory Park (/apartments/nearby/victory-park-pasadena)

View more ▾

Apartments Near Pasadena Schools

Alverno High School (/apartments/nearby/alverno-high-school-pasadena)

Pasadena High School (/apartments/nearby/pasadena-high-school-pasadena)

Rhythms of the Village Charter High School (/apartments/nearby/rhythms-of-the-village-charter-high-school-pasadena)

La Salle High School (/apartments/nearby/la-salle-high-school-pasadena)

John Muir High School (/apartments/nearby/john-muir-high-school-pasadena)

View more ▾

Apartments Near Employers

Jacobs Engineering Group Headquarters (/apartments/nearby/jacobs-engineering-group-headquarters)

Avery Dennison Headquarters (/apartments/nearby/avery-dennison-headquarters)

Walk Score Professional (/professional/)

Real Estate

(/professional/walk-score-widget.php)

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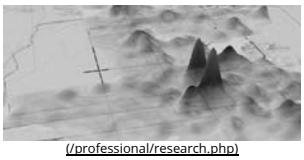
Software Developers

(/professional/walk-score-apis.php)

Build apps with Walk Score, public transit data, and commute and travel times via Walk Score APIs (/professional/walk-score-apis.php).

Data and Analysis



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Use Walk Score data (/professional/research.php) for real estate, public health, finance, and urban planning research and analysis.

(http://taps.io/LaVw) (http://taps.io/LaVg)

Walk Score (/)

Blog (http://blog.walkscore.com/)
About (/about.shtml)
How It Works (/how-it-works/)
Press (/press/)
Android (https://play.google.com/store/apps/details?id=com.walkscore.neighborhoods)
iPhone (https://itunes.apple.com/us/app/walk-score/id536017866?ls=1&mt=8)
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Real Estate Professionals (/professional/real-estate-professionals.php)
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If you are using a screen reader or having trouble reading this website, please call Walk Score customer service at (253) 256-1634.

253 South Los Robles Avenue

Downtown, (/CA/Pasadena/Downtown) Pasadena (/CA/Pasadena), 91101

Add scores to your site (/professional/badges.php?address=253 South Los Robles Avenue Pasadena, CA 91101)

Commute to **Downtown Pasadena (/compare#edit-commutes)**

1 min 8 min 2 min 11 min View Routes

Favorite **Map**

Nearby Apartments (/apartments/search/253-s-los-robles-ave-pasadena-ca-91101)

Looking for a home for sale in Pasadena? (https://www.redfin.com/city/14498/CA/Pasadena)

Walk Score 86

Very Walkable
Most errands can be accomplished on foot.

Bike Score 96

Biker's Paradise
Flat as a pancake, excellent bike lanes.

About your score

About this Location

253 South Los Robles Avenue has a Walk Score of 86 out of 100. This location is Very Walkable so most errands can be accomplished on foot.

253 South Los Robles Avenue is an eight minute walk from the Metro Gold Line (804) at the Del Mar Station stop.

This location is in the Downtown neighborhood in Pasadena. Nearby parks include Central Park, Old Pasadena Historic District and Pasadena Memorial Park.

Travel Time Map

Add to your site (/professional/travel-time-js-api.php#widget-example)

Explore how far you can travel by car, bus, bike and foot from 253 South Los Robles Avenue.

Nearby Public Transit

Rail lines:

Metro Gold Line (804)	0.4 mi	Metro Gold Line (804)	0.6 mi

Bus lines:

267/264 Metro Local Line	0.0 mi	177 Metro Local Line	0.1 mi
187 Pasadena - Glendora -...	0.3 mi	687/686 Metro Local Line	0.3 mi
180/181 Metro Local Line	0.3 mi	256 Metro Local Line	0.3 mi
780 Metro Rapid Line	0.3 mi		

Car shares:

RelayRides: 1997 Nissan Ma...	0.1 mi	RelayRides: 2005 Lexus ES 3...	0.2 mi
RelayRides: 2001 Mazda MX...	0.6 mi	Zipcar: Westgate Apartments	0.6 mi
RelayRides: 2010 Audi A4	0.6 mi	Zipcar: Caltech - Lot 14 S Ca...	0.8 mi
RelayRides: 2011 Ford Must...	0.9 mi	RelayRides: 2011 Chevrolet...	0.9 mi
RelayRides: 2008 Toyota Hi...	0.9 mi	RelayRides: 2001 Ford Explo...	1.1 mi

Bike shares:

Incycle Bicycles	0.5 mi

Downtown Pasadena

Apartments for Rent | **Homes for Sale** (http://www.redfin.com)

View all Downtown apartments (/apartments/search/CA/Pasadena/Downtown) on a map.

from **$1,984**
Acappella Pasadena (/scor...
1 bed Walk Score 90

from **$1,999**
Westgate (/score/westgate...
Studio Walk Score 92

from **$2,182**
AVA Pasadena (/score/the-...
1 bed Walk Score 90

from **$1,967**
Villas of Pasadena (/score/...
1 bed Walk Score 84

from **$2,343**
Avalon Pasadena (/score/2...
1 bed Walk Score 93

from **$1,950**
Terraces at Paseo Colorad...
Studio Walk Score 91

from **$2,076**
Avalon Del Mar Station (/s...
Studio Walk Score 94

from **$1,864**
San Pasqual (/score/san-pa...
1 bed Walk Score 92

from **$2,010**
Arpeggio Pasadena (/score...
1 bed Walk Score 94

Popular apartment searches include fitness (/CA/Pasadena/Downtown/fitness-apartments), pool (/CA/Pasadena/Downtown/pool-apartments) and hardwood floor (/CA/Pasadena/Downtown/hardwood-floor-apartments).

Downtown Neighborhood

253 South Los Robles Avenue is in the Downtown neighborhood. Downtown is the most walkable neighborhood in **Pasadena** (/CA/Pasadena) with a neighborhood Walk Score of 88.

Learn More About Downtown (/CA/Pasadena/Downtown) **Learn More About Pasadena (/CA/Pasadena)**

United States (/cities-and-neighborhoods/) California (/CA) Pasadena (/CA/Pasadena)
Downtown (/CA/Pasadena/Downtown)

Walk Score (/)

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About (/about.shtml)
How It Works (/how-it-works/)
Press (/press/)
Android (https://play.google.com/store/apps/details?id=com.walkscore.neighborhoods)
iPhone (https://itunes.apple.com/us/app/walk-score/id336017866?ls=1&mt=8)
Terms & Privacy (/terms-of-use.shtml)
Feedback (/contact)

Professional (/professional/)

Walk Score Widget (/professional/walk-score-widget.php)
Walk Score APIs (/professional/walk-score-apis.php)
Data Services (/professional/research.php)
Real Estate Professionals (/professional/real-estate-professionals.php)
Walkability Research (/professional/walkability-research.php)
Badges (/professional/badges.php)

If you are using a screen reader or having trouble reading this website, please call Walk Score customer service at (253) 256-1634.

253 S Los Robles last updated: 3/21/2018

Greenhouse Gas Analysis

Pasadena Department of Water and Power Carbon Dioxide Intensity Factor Worksheet

Pasadena Department of Water and Power

	CO2 Emissions by Year	MMTCO2	MTCO2
(A)	2020	0.40	399,161
(B)	2021	0.39	390,090

Source:

City of Pasadena Water and Power Department Integrated Resource Plan Update, 2012.

https://ww5.cityofpasadena.net/water-and-power/wp-content/uploads/sites/54/2017/08/2012-IRP-Update.pdf

	Energy Supply Resources (latest year data is available, 2020)	GWh	MWh
(C)	Total	1,137.00	1,137,000

Source:

2015 Pasadena IRP Load Forecast

https://ww5.cityofpasadena.net/water-and-power/wp-content/uploads/sites/54/2017/08/IRP-Load-Forecast-Summary.pdf

(D)	Pounds per Metric Ton Conversion	2,204.62	lbs/MT

2020 CO2 (lbs) per MWh **773.97 lbs CO2/MWh [calculated: (A) * (D) / (C)]**