Draft

THE MADISON

Greenhouse Gas Technical Report

Prepared for
Cabrillo Community Partners, LLC

August 2017

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OUR COMMITMENT TO SUSTAINABILITY | ESA helps a variety of public and private sector clients plan and prepare for climate change and emerging regulations that limit GHG emissions. ESA is a registered assessor with the California Climate Action Registry, a Climate Leader, and founding reporter for the Climate Registry. ESA is also a corporate member of the U.S. Green Building Council and the Business Council on Climate Change (BC3). Internally, ESA has adopted a Sustainability Vision and Policy Statement and a plan to reduce waste and energy within our operations. This document was produced using recycled paper.

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ACRONYMS AND ABBREVIATIONS

AB 32	California Global Warming Solutions Act of 2006
Basin	South Coast Air Basin
BAU	Business as Usual
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
CAPCOA	California Air Pollution Control Officer's Association
CARB	California Air Resources Board
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CEUS	Commercial End-Use Survey
CH_4	Methane
City	City of Santa Ana
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
N_2O	Nitrous Oxide
PFCs	Perfluorocarbons

RPS	Renewable Portfolio Standard
SF_6	Sulfur Hexafluoride
OPR	California Office of Planning and Research
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
SARTC	Santa Ana Regional Transportation Center
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SIP	State Implementation Plan
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency

EXECUTIVE SUMMARY

Cabrillo Community Partners, LLC (the Applicant) proposes to develop a mixed-use live/work and commercial project (Project) at 200 North Cabrillo Park Drive in Santa Ana, California. The Project Site is a 2.79-acre vacant parcel of land within the Metro East Mixed Use Overlay Zone. The proposed Project consists of a mixed-use development that would include 260 residential units, approximately 7,000 square feet of ground floor retail/commercial space and a three level parking structure. The proposed Project is expected to be open by 2019.

In accordance with the requirements under the California Environmental Quality Act (CEQA), this Greenhouse Gas (GHG) Technical Report provides an estimate of GHG emissions generated by the Project and predicts the potential GHG impacts. 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 burning of fossil fuels for demolition, grading, building construction, paving and painting, would result in temporary and incremental increases in GHG emissions.
- *Operation* – Activities from the operation of the Project, such as heating, cooling, electricity, lawn care and maintenance activities, and the treatment and conveyance of water, would result in permanent increases in GHG emissions.

The Project Site is currently vacant and does not generate GHG emissions. GHG impacts are based solely on emissions from the Project. The Project would result in annual operational GHG emissions, inclusive of amortized construction GHG emissions, of 2,931 metric tons of carbon dioxide equivalents ($MTCO_2e$) per year, which would be below the threshold of 3,000 $MTCO_2e$ per year. As a result, the Project would have a less than significant impact.

GHG emissions associated with the Project would be consistent with the applicable portions of City of Santa Ana General Plan, Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS) policies intended to meet the region's GHG reduction targets, as assigned by the California Air Resources Board (CARB). Thus the Project's GHG emissions would be consistent with regulatory schemes intended to reduce GHG emissions and would result in a less than significant impact with respect to consistency with applicable GHG reduction plans.

SECTION 1.0
Introduction

1.1 Existing Conditions

Cabrillo Community Partners, LLC (the Applicant) proposes to develop a mixed-use live/work and commercial project (Project) at 200 North Cabrillo Park Drive in Santa Ana, California as shown in **Figure 1**, *Vicinity Location Map*. The Project Site is a 2.79-acre vacant parcel of land within the Metro East Mixed Use Overlay Zone. The Project Site is located east of Interstate 5 and relatively flat within an elevation ranging between 136 feet to 140 feet as shown in **Figure 2**, *Aerial Photograph of Project Site and Vicinity*.

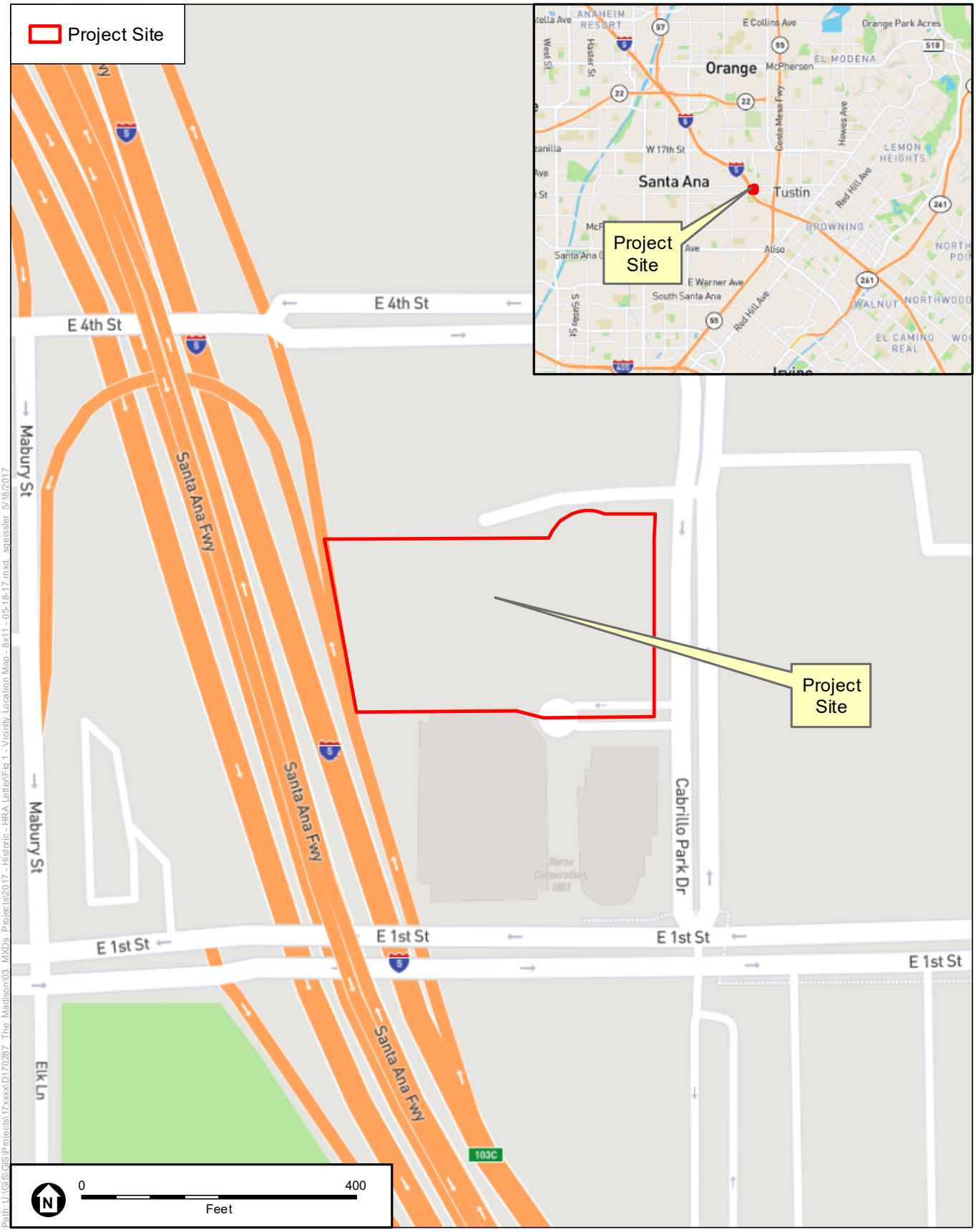
1.2 Project Description

The proposed Project consists of a mixed-use development that would include 260 multi-family residential units and approximately 7,000 sf of retail/commercial space on the existing 2.79-acre vacant site. The Project would include five -stories of multi-family apartment dwelling units over a two-level parking structure plus an additional level of subterranean parking. The total of 260 apartment homes would consist of 54 studio units, 143 one-bedroom units, 11 one-bedroom plus loft units, 44 two-bedroom units, four (4) three-bedroom units, and four live/work units, with a total of 2,507 sf dedicated commercial space. The ground floor would consist of approximately 7,000 sf of retail space located within two suites over one level of subterranean parking. Parking is also located at grade and at Level 2, totaling 445 parking spaces. Other on-site facilities/amenities include a leasing office, a lounge/lobby, business center, pool/spa, a fitness center for residents, and a roof top deck. The proposed Project is expected to be operational in 2019.

1.3 Project Design Features

The Project would incorporate project design features (PDFs) that would reduce construction and operational GHG emissions. PDFs are part of the Project design, and are not mitigation measures. The PDFs proposed for the Project include the following features:

- The Project would be located near basic commercial services and public transit opportunities. The Project Site would be within 1.5 mile of banks, groceries, and restaurants, and has convenient access to public transportation which is located less than a quarter mile away from Project Site.
- The Project would be designed to optimize energy performance and reduce building energy cost by installing ENERGY STAR dishwashers and refrigerators in all residential units.



SOURCE: Open Street Map, 2016.

Madison Project

Figure 1
Vicinity Location Map

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Path: U:\GIS\GIS\Projects\17xxxx\D170287_The_Madison\03_MXDs_Projects\2017 - Historic - HRA Letter\Fig 2 - Aerial Photograph of Project Site and Vicinity - 8x11 - 05-18-17.mxd sgeissler 5/18/2017

SOURCE: NAIP, 2014 (Aerial).

Madison Project

Figure 2
Aerial Photograph of Project Site and Vicinity

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- The Project's landscaping would include portions of artificial turf and use water-efficient irrigation systems.

- The parking structure would be designed with occupancy-sensor controlled lighting that would place lighting fixtures in a low power state in unoccupied zones. A demonstration project by the United States Department of Energy indicated that the use of occupancy-sensor controlled lighting achieved a reduction of greater than 50 percent in lighting energy use compared to a similarly lighted parking structure without occupancy-sensor controls.[1] For the purposes of this assessment, compliance with this feature is assumed to achieve a minimum 50 percent reduction in the energy required for the parking structure.

- Residential fireplaces would not be installed.

In addition to the PDFs listed above, the Project would comply with requirements of other agencies such as the SCAQMD including the following:

- The project would comply with South Coast Air Quality Management District (SCAQMD) Rule 403, which requires the following specific dust control measures during construction activities:

    - Water or a stabilizing agent shall be applied to exposed surfaces at least two times per day to prevent generation of dust plumes.

    - All haul trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).

    - Construction activity on unpaved surfaces shall be suspended when wind speed exceed 25 miles per hour (such as instantaneous gusts).

    - Ground cover in disturbed areas shall be replaced as quickly as possible.

- In accordance with Sections 2485 in Title 13 of the California Code of Regulations (CCR), the idling of diesel-fueled commercial vehicles (weighing over 10,000 pounds) during construction shall be limited to five minutes at any location, as applicable.

- The Project shall comply with applicable provisions of SCAQMD Rule 1186 including street sweeping equipment (see also Rule 403).

1.4 Land Use Characteristics

The Project Site is located within the Metro East Mixed Use Overlay Zone (Overlay Zone) and designated as Specific Development 54. This zone is located immediately east of Interstate 5 and immediately west of State Route 55 in the City of Santa Ana in Orange County. The zone is

[1] United States Department of Energy, Building Technologies Office, SSL Demonstration: Parking Garage Lighting, Washington DC, June 2013. Available at https://www1.eere.energy.gov/buildings/publications/pdfs/ssl/deptoflabor_brief.pdf. Accessed May 2017.

bounded by the Interstate 5 on the west and south; Tustin Avenue on the east, and East Sixth Street on the north. The Project is a mixed use development and is consistent with the land uses of the Metro East Mixed Use Overlay Zone and the City's General Plan. Land use designations within the Overlay Zone include: Professional, Community Commercial, General Commercial, Arterial Commercial, Open Space, and Suburban Apartments.

The California Air Pollution Control Officers Association (CAPCOA) has provided guidance for mitigating or reducing emissions from land use development projects. In September 2010, CAPCOA released a guidance document titled *Quantifying Greenhouse Gas Mitigation Measures*, which provides emission reduction values for recommended reduction measures.[2] The CAPCOA guidance document was utilized in this analysis for quantifying reductions due to land use characteristics and PDFs, as inputs to the California Emissions Estimator Model (CalEEMod).

The land use characteristics of the Project, listed above, are consistent with those shown in the CAPCOA guidance document to reduce VMT to and from the Project Site, resulting in less GHG emissions.

Increased Destination Accessibility: This measure corresponds to CAPCOA guidance measure Land Use Transportation (LUT)-4.[3] According to CAPCOA, the reduction in VMT from this measure applies to urban and suburban settings for residential, retail, office, industrial, and mixed-use projects. The Project is located in a compact infill location in close proximity to the Downtown Santa Ana area (less than 1.5 miles), and is a mixed-use development, including residential and retail uses; therefore, this measure applies to the Project. According to the CAPCOA guidance, factors that contribute to VMT reductions under this measure include the distance to a downtown or major job center. The Project would be located in an area that offers access to multiple other nearby destinations, including restaurants, office, retail, and residential uses. The Project Site is also located near other job centers in the region and less than 1.5 miles from Downtown Santa Ana. The access to multiple destinations in proximity to the Project Site would reduce vehicle trips and VMT, encourage walking and non-automotive forms of transportation, and result in corresponding reductions in transportation-related emissions.

Increased Transit Accessibility: Locating a high density project near transit facilities, encourages the use of transit by people traveling to or from a project site. This measure corresponds to CAPCOA guidance measure LUT-5.[4] According to CAPCOA, the reduction in VMT from this measure 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 near multiple transit stops and is mixed-use; therefore, this measure applies to the Project.

2 California Air Pollution Control Officers Association, Quantifying Greenhouse Gas Mitigation Measures, (2010).

3 California Air Pollution Control Officers Association, Quantifying Greenhouse Gas Mitigation Measures, (2010) 167-170.

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

According to the CAPCOA guidance, factors that contribute to VMT reductions under this measure include the distance to transit stations near the Project. The Project would be located within a quarter-mile of public transportation. The Project Site is served by the Orange County Transportation Authority (OCTA). OCTA provided multiple bus routes near the Project with Route 64 located 0.10 miles from Project Site at Cabrillo Street and East First Avenue, Route 463 of the Metrolink Stationlink Route with service to the Santa Ana Regional Transportation Center (SARTC) located 0.10 miles north of the Project Site at East 4th Street and North Cabrillo; Route 71 located 0.40 miles east of the Project Site at North Tustin Avenue and East 1st Street. As previously stated, Route 463 provides service to the SARTC located 1 mile from the Project Site and has Amtrak lines. The increased transit accessibility would reduce vehicle trips and VMT versus the statewide and Air Basin average, encourage walking and non-automotive forms of transportation, and result in corresponding reductions in transportation-related emissions.

1.5 Existing Greenhouse Gas Environment

Global Climate Change

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, data indicates that the current global conditions differ from past climate changes in rate and magnitude. The current increased changes in global climate have been attributed to anthropogenic activities by the Intergovernmental Panel on Climate Change (IPCC).[5] GHG trap long-wave radiation or heat in the atmosphere, which heats the surface of the Earth. Without human intervention, the Earth maintains an approximate balance between the GHG emissions in the atmosphere and the storage of GHGs in the oceans and terrestrial ecosystems. GHGs are the result of both natural and anthropogenic activities. Forest fires, decomposition, industrial processes, landfills, and consumption of fossil fuels for power generation, transportation, heating, and cooking, are the primary sources of GHG emissions.

The federal government and State of California recognized that anthropogenic (i.e., human-caused) GHG emissions are contributing to changes in the global climate, and such changes are having and will have adverse effects on the environment, the economy, and public health. While worldwide contributions of GHG emissions are expected to have widespread consequences, it is not possible to link particular changes to the environment of California or elsewhere to GHGs emitted from a particular source or location. In other words, emissions of GHGs have the potential to cause global impacts rather than local impacts. Increased concentrations of GHGs in the Earth's atmosphere have been linked to global climate change and such conditions as, rising surface temperatures, melting icebergs and snowpack, rising sea levels, and the increased frequency and magnitude of severe weather conditions. Existing climate change models also show that climate warming portends a variety of impacts on agriculture, including loss of microclimates that support specific crops, increased pressure from invasive weeds and diseases,

5 Intergovernmental Panel on Climate Change, Fourth Assessment Report: The Physical Science Basis, Summary for Policy Makers, (2007).

and loss of productivity due to changes in water reliability and availability. In addition, rising temperatures and shifts in microclimates associated with global climate change are expected to increase the frequency and intensity of wildfires.

California law defines GHGs to include the following compounds: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).[6] The most common GHG that results from human activity is CO_2, which represents 77 percent of total anthropogenic GHG emissions in the atmosphere (as of 2004 data),[7] followed by CH_4 and N_2O. Scientists have established a Global Warming Potential (GWP) to gauge the potency of each GHG's ability to absorb and re-emit long-wave radiation. The GWP of a gas is determined using CO_2 as the reference gas with a GWP of 1 over 100 years. For example, a gas with a GWP of 10 is 10 times more potent than CO_2 over 100 years. The sum of each GHG multiplied by its associated GWP is referred to as carbon dioxide equivalents (CO_2e). The measurement unit of CO_2e is used to report the combined potency of GHG emissions. The IPCC updated the GWP values based on the latest science in its Fourth Assessment Report (AR4). The updated GWPs in the IPCC AR4 have begun to be used in recent GHG emissions inventories.[8]

Based on the 2014 GHG inventory data from CARB, California emitted 440.4.5 million metric tons of CO_2e ($MMTCO_2e$) including emissions resulting from imported electrical power, and 405 $MMTCO_2e$ excluding emissions related to imported power, which represents a 2.8 $MMTCO_2e$ decrease from 2013.[9] Between 1990 and 2014, the population of California grew by approximately 8.8 million (from 29.8 to 38.6 million),[10] which represents an increase of approximately 30 percent from 1990 population levels. In addition, the California economy, measured as gross state product, grew from $773 billion in 1990 to $2.32 trillion in 2014 representing an increase of approximately three times the 1990 gross state product.[11] Despite the population and economic growth, California's net GHG emissions only grew by approximately 2 percent between 1990 and 2014. According to CARB, the declining trend coupled with the state's GHG reduction programs (such as the Renewables Portfolio Standard, LCFS, vehicle efficiency standards, and declining caps under the Cap and Trade Program) demonstrate that California is on

6 CEQA Guidelines Section 15364.5; Health and Safety Code, section 38505(g).

7 Intergovernmental Panel on Climate Change, Fourth Assessment Report: Synthesis Report, (2007).

8 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 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.

9 California Air Resources Board, California Greenhouse Gas Emission Inventory-2016 Edition. Available at http://www.arb.ca.gov/cc/inventory/data/data.htm. Accessed May 2017.

10 United States Census Bureau, California, Population of Counties by Decennial Census: 1900 to 1990. Available at: https://www.census.gov/population/www/censusdata/cencounts/files/ca190090.txt. Accessed May 2017; California Department of Finance, E-5 Population and Housing Estimates for Cities, Counties and the State, January 1, 2011-2017, with 2010 Benchmark, http://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-5/. Accessed May 2017.

11 California Department of Finance, Gross State Product. Available at: http://www.dof.ca.gov/Forecasting/Economics/Indicators/Gross_State_Product/. Accessed May 2017. Amounts are based on current dollars as of the date of the report (June 2016).

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).[12]

Existing Site Greenhouse Gas Emissions

The 2.79-acre Project Site is currently a vacant parcel of land within the Metro East Mixed Use Overlay Zone located at 200 North Cabrillo Park Drive in Santa Ana, California. The project site does not currently generate vehicle trips, and therefore, does not generate GHG emissions from mobile sources. Furthermore, since the site is vacant it does not produce GHG emissions. This analysis will focus solely on GHG emissions from the Project's construction and operational activities.

12 California Air Resources Board, Frequently Asked Questions for the 2016 Edition California Greenhouse Gas Emission Inventory, (2016). Available: https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2014/ghg_inventory_faq_20160617.pdf. Accessed May 2017.

SECTION 2.0
Regulatory Setting

2.1 Federal

The United States Environmental Protection Agency (USEPA) is responsible for implementing federal policy to address GHGs. The federal government administers a wide array of public-private partnerships to reduce the GHG intensity generated in the United States. These programs focus on energy efficiency, renewable energy, methane and other non-CO_2 gases, agricultural practices, and implementation of technologies to achieve GHG reductions. The USEPA implements numerous voluntary programs that contribute to the reduction of GHG emissions. These programs (e.g., the Energy Star labeling system for energy-efficient products) play a significant role in encouraging voluntary reductions from large corporations, consumers, industrial and commercial buildings, and many major industrial sectors.

In addition to these programs, policies focusing on the transportation sector have been developed to reduce fuel consumption and increase vehicle fuel efficiency. In August 2012, USEPA and USDOT adopted standards for model year 2017 through 2025 passenger cars and light-duty trucks. By 2020, vehicles are required to achieve a combined standard of 41.7 mpg and 213 grams of CO_2 per mile. By 2025, vehicles are required to achieve 54.5 mpg (if GHG reductions are achieved exclusively through fuel economy improvements) and 163 grams of CO_2 per mile.

2.2 State

California Air Resources Board

CARB, as part of the California Environmental Protection Agency (CalEPA), is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, CARB conducts research, sets California Ambient Air Quality Standards (CAAQS), compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. CARB also sets fuel specifications to further reduce vehicular emissions. CARB has primary responsibility for the development of California's State Implementation Plan (SIP) for criteria pollutants designated as nonattainment of NAAQS in an air basin, in collaboration with the federal government and local air districts. CARB also has primary responsibility for adopting regulations to meet the State's goal of reducing GHG emissions to 1990 levels by 2020.

CARB Anti-Idling Measure

In 2004, CARB adopted a control measure to limit the idling time of commercial heavy-duty diesel motor vehicles in order to reduce public exposure to diesel particulate matter (DPM) and other air contaminants.[13] The anti-idling measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. In general, the measure prohibits idling for more than 5 minutes at any location. While this measure is aimed primarily aimed at reducing air pollution, it has a co-benefit of limiting GHG emissions from unnecessary idling.

California Executive and Legislative GHG Actions

Executive Order S-3-05 and Executive Order B-30-15

California Governor Arnold Schwarzenegger enacted Executive Order S-3-05 on June 1, 2005, the following GHG emission reduction targets:

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

In accordance with Executive Order S-3-05, the Secretary of CalEPA is required to coordinate efforts of various agencies in order to collectively and efficiently reduce GHGs. Some of the agency representatives involved in the GHG reduction plan include the Secretary of the California Business, Transportation and Housing Agency, the Secretary of the California Department of Food and Agriculture, the Secretary of the California Natural Resources Agency, the Chairperson of CARB, the Chairperson of the CEC, and the President of the California Public Utilities Commission (CPUC). Representatives from these agencies comprise the California Climate Action Team (CCAT).

The CCAT provides biennial reports to the Governor and the California State Legislature on the state of GHG reductions in California as well as strategies for mitigating and adapting to climate change. The first CCAT Report to the Governor and the Legislature in 2006 contained recommendations and strategies to help meet the targets in Executive Order S 3-05.[14] The 2010 CCAT Report, finalized in December 2010, expands on the policy oriented 2006 assessment.[15] The new information detailed in the CCAT Report includes development of revised climate and sea-level projections using new information and tools that have become available in the last two years; and an evaluation of climate change within the context of broader social changes, such as land-use changes and demographic shifts.

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13 Calif. Code of Regulations, Title 13, Sec. 2485. See CARB, ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling, http://www.arb.ca.gov/regact/idling/idling.htm. Accessed June 2017.

14 California Environmental Protection Agency, California Climate Action Team Report to the Governor and the Legislature, (2006).

15 California Environmental Protection Agency, California Climate Action Team Report to the Governor and the Legislature, (2010).

On April 29, 2015, Governor Jerry Brown issued Executive Order B-30-15. Therein, Governor Brown:

- Established a new interim statewide reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030.
- Ordered all state agencies with jurisdiction over sources of GHG emissions to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 reduction targets.
- Directed CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent.

CARB subsequently expressed its intention to initiate the Climate Change Scoping Plan update during the summer of 2015, with adoption scheduled for late June 2017. Additional information regarding the Climate Change Scoping Plan update is provided in the subsection below.

California Health and Safety Code, Division 25.5 – California Global Warming Solutions Act of 2006

In 2006, the California State Legislature adopted Assembly Bill (AB) 32 (codified in the California HSC, Division 25.5 – California Global Warming Solutions Act of 2006), which focuses on reducing GHG emissions in California to 1990 levels by 2020. HSC Division 25.5 defines regulated GHGs as CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6 and represents the first enforceable statewide program to limit emissions of these GHGs from all major industries, with penalties for noncompliance. The law further requires that reduction measures be technologically feasible and cost effective. Under HSC Division 25.5, CARB has the primary responsibility for reducing GHG emissions. CARB is required to adopt rules and regulations directing state actions that would achieve GHG emissions reductions equivalent to 1990 statewide levels by 2020.

California Assembly Bill 1493

In response to the transportation sector accounting for more than half of California's CO_2 emissions, AB 1493 was enacted on July 22, 2002 to require CARB to set GHG emission standards for passenger vehicles, light duty trucks, and other vehicles whose primary use is non-commercial personal transportation manufactured in and after 2009. In setting these standards, CARB must consider cost effectiveness, technological feasibility, economic impacts, and provide maximum flexibility to manufacturers. In 2014, the State of California submitted a request for a waiver from federal clean air regulations, which ordinarily preempts state regulation of motor vehicle emission standards, to allow the State to require reduced tailpipe emissions of CO_2. In late 2007, USEPA denied California's waiver request. In early 2008, the State brought suit against USEPA related to this denial. In January 2009, the President of the United States directed USEPA to assess whether its denial of the waiver was appropriate under the federal CAA. In June 2009, USEPA granted California the waiver.

However, as discussed previously, USEPA and USDOT have adopted federal standards for model year 2012 through 2016 light-duty vehicles. In light of USEPA and USDOT standards, California, and states adopting California emissions standards, have agreed to defer to the

proposed federal standard through model year 2016. The 2016 endpoint of the federal and state standards is similar, although the federal standard ramps up slightly more slowly than required under the state standard. The state standards (known as the Pavley standards) require additional reductions in CO_2 emissions beyond model year 2016 (known as the Pavley Phase II standards).[16] As noted above, USEPA and USDOT have adopted GHG emission standards for model year 2017 through 2025 vehicles. These standards are slightly different from the Pavley Phase II standards, but the State has agreed not to contest these standards, in part that while the federal standards would achieve slightly less reductions in California, they would achieve greater reductions nationally. CARB is in the process of adopting regulations that would allow manufacturers to comply with the 2017-2025 national standards to meet AB 1493.

Executive Order S-01-07

Executive Order S-01-07 was enacted by Governor Schwarzenegger on January 18, 2007, which mandates that the following be established: 1) a statewide goal to reduce the carbon intensity of California's transportation fuels by at least ten percent by 2020; and 2) a Low Carbon Fuel Standard (LCFS) for transportation fuels in California.

Senate Bill 97

SB 97, enacted in 2007, amended the CEQA Guidelines to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. SB 97 directed the California Office of Planning and Research (OPR) to develop revisions to the CEQA Guidelines "for the mitigation of GHG emissions or the effects of GHG emissions" and directed the Natural Resources Agency to certify and adopt these revised CEQA Guidelines by January 2010. The revisions were completed March 2010, codified into the California Code of Regulations, and effective within 120 days pursuant to CEQA. The amendments provide regulatory guidance for the analysis and mitigation of the potential effects of GHG emissions. The CEQA Guidelines require:

- Inclusion of GHG analyses in CEQA documents;
- Determination of significance of GHG emissions; and,
- If significant GHG emissions would occur, adoption of mitigation to address significant emissions.

Senate Bill 375

Adopted by the state on September 30, 2008, SB 375 (Chapter 728, Statutes of 2008) establishes mechanisms for the development of regional targets for reducing passenger vehicle greenhouse gas emissions. Under SB 375, CARB is required, in consultation with the State's Metropolitan Planning Organizations, to set regional GHG reduction targets for the passenger vehicle and light-

16 On March 24, 2017, CARB voted unanimously to uphold the State's model year 2017-2025 cars and light truck emissions standards. See: California Air Resources Board, CARB finds vehicle standards are achievable and cost-effective, March 24, 2017. Available at: https://www.arb.ca.gov/newsrel/newsrelease.php?id=908. Accessed May 2017.

duty truck sector for 2020 and 2035. In February 2011, CARB adopted the final GHG emissions reduction targets for the Southern California Association of Governments (SCAG), which is the Metropolitan Planning Organization (MPO) for the region in which the City of Santa Ana is located.[17]

SCAG's RTP/SCS provides specific strategies for successful implementation, including strategies include supporting projects that encourage a diverse job opportunities for a variety of skills and education, recreation and cultures and a full-range of shopping, entertainment and services all within a relatively short distance; encouraging employment development around current and planned transit stations and neighborhood commercial centers; encouraging the implementation of a "Complete Streets" policy that meets the needs of all users of the streets, roads and highways including bicyclists, children, persons with disabilities, motorists, electric vehicles, movers of commercial goods, pedestrians, users of public transportation, and seniors; and supporting alternative fueled vehicles.

In addition, the 2016 RTP/SCS includes new strategies to promote active transportation, supports local planning and projects that serve short trips, expand understanding and consideration of public health in the development of local plans and projects, and supports improvements in sidewalk quality, local bike networks, and neighborhood mobility areas. The 2016 RTP/SCS also proposes increasing access to the California Coast Trail, light rail and bus stations, and promoting corridors that support biking and walking, such as through a regional greenway network and local bike networks. The 2016 RTP/SCS proposes to better align active transportation investments with land use and transportation strategies, increase competitiveness of local agencies for federal and state funding, and to expand the potential for all people to use active transportation. CARB has accepted the SCAG GHG quantification determination in the 2016 RTP/SCS.[18]

Title 24, Building Standards Code and CALGreen Code

The CEC adopted California Code of Regulations, Title 24, Part 6 (Energy Efficiency Standards for Residential and Nonresidential Buildings) in 1978 in response to a legislative mandate to reduce energy consumption in the State. Although not originally intended to reduce GHG emissions, the standards of increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels from residential and nonresidential buildings would result in fewer GHG emissions. The standards are updated periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods.

Part 11 of Title 24 Building Energy Efficiency Standards is referred to as the California Green Building Standards (CALGreen) Code. The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable

17 California Air Resources Board, Sustainable Communities. Available at https://www.arb.ca.gov/cc/sb375/sb375.htm. Accessed June 2017.

18 California Air Resources Board, Southern California Association of Governments' (SCAG) 2016 Sustainable Communities Strategy (SCS) ARB Acceptance of GHG Quantification Determination, June 2016. Available at https://www.arb.ca.gov/cc/sb375/scag_executive_order_g_16_066.pdf. Accessed June 2017.

construction practices in the following categories: planning and design; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental air quality."[19] The CALGreen Code is not intended to substitute for or be identified as meeting the certification requirements of any green building program that is not established and adopted by the California Building Standards Commission. When the CALGreen Code went into effect in 2009, compliance through 2010 was voluntary. As of January 1, 2011, the CALGreen Code is mandatory for all new buildings constructed in the State. The CALGreen Code establishes mandatory measures for new residential and non-residential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design and overall environmental quality.[20] The CALGreen Code was most recently updated in 2016 to include new mandatory measures for residential as well as nonresidential uses, effective January 1, 2017.[21]

Renewables Portfolio Standard

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the State's Renewable Portfolios Standard (RPS) to 33 percent renewable power by 2020. Pursuant to Executive Order S-21-09, CARB was also preparing regulations to supplement the RPS with a Renewable Energy Standard that will result in a total renewable energy requirement for utilities of 33 percent by 2020. However, on April 12, 2011, Governor Jerry Brown signed SB X1-2 to increase California's RPS to 33 percent by 2020. On October 7, 2015.SB 350 (Chapter 547, Statues of 2015) further increased the RPS to 50 percent by 2030, also including interim targets of 40 percent by 2024 and 45 percent by 2027.

2.3 Regional

South Coast Air Quality Management District

The Project Site is located in the South Coast Air Basin (Air Basin), where air emissions are regulated by SCAQMD. SCAQMD is responsible for promoting and improving the air quality of the Air Basin though air quality monitoring, evaluation, education, implementation of control measures to reduce emissions from stationary sources, permitting and inspection of pollution sources, enforcement of air quality regulations, and by supporting and implementing measures to reduce emissions from motor vehicles. After AB 32 was passed, SCAQMD formed a Climate Change Committee along with a Greenhouse Gases CEQA Significance Thresholds Working Group and the SoCal Climate Solutions Exchange Technical Advisory Group. On September 5, 2008, the SCAQMD Governing Board approved the SCAQMD Climate Change Policy, which outlines actions SCAQMD will take to assist businesses and local governments in implementing climate change measures, decrease the agency's carbon emissions, and provide information to the

19 California Building Standards Commission, 2010 California Green Building Standards Code, (2010).

20 California Building Standards Commission, 2010 California Green Building Standards Code, (2010).

21 California Building Standards Commission, CALGreen (Part 11 of Title 24). Available at http://www.bsc.ca.gov/Home/CALGreen.aspx. Accessed June 2017.

public regarding climate change. On December 5, 2008, the Board approved interim CEQA GHG significance thresholds for stationary sources, and related rules and plans. SCAQMD also adopted a tiered approach for determining significance. Projects that are exempt from CEQA or consistent with an approved local GHG reduction plan can be found to be less than significant. Tier 3, the primary tier SCAQMD will use for determining significance, has a screening significance threshold designed to capture 90 percent of sector GHG emissions.[22]

2.4 Local

City of Santa Ana

Currently, the City of Santa Ana does not have GHG reduction requirements. However, the City's General Plan consists of elements that address energy efficiency and reducing energy consumption in the land use and transportation sectors. The goals and polices of the individual elements would lead to reductions of GHG emissions and are discussed in more detail in Sections 3 and 4.

22 SCAQMD, Greenhouse Gases (GHG) CEQA Significance Thresholds Working Group Meeting #15, http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf. Accessed June 2017.

SECTION 3.0
Significance Thresholds

3.1 State CEQA Guidelines

Section 15064.7 of the State CEQA Guidelines defines a threshold of significance as an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant. CEQA gives wide latitude to lead agencies in determining what impacts are significant and does not prescribe thresholds of significance, analytical methodologies, or specific mitigation measures. CEQA leaves the determination of significance to the reasonable discretion of the lead agency and encourages lead agencies to develop and publish thresholds of significance to use in determining the significance of environmental effects. OPR released preliminary draft CEQA guideline amendments for GHG emissions in January 2009. OPR does not identify a threshold of significance for GHG emissions, nor has it prescribed assessment methodologies or specific mitigation measures. The amendments encourage lead agencies to consider many factors in performing a CEQA analysis, but preserve the discretion granted by CEQA to lead agencies in making their own determinations based on substantial evidence. The guideline amendments augmented Appendix G of the CEQA Guidelines, the environmental checklist form, to include a section on greenhouse gas emissions. The draft guideline amendments suggested the following questions:

GHG-1: Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, based on any applicable threshold of significance?

GHG-2: Would the project conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs?

3.2 Significance Criteria

The State CEQA Guidelines do not provide numeric or qualitative thresholds of significance for GHG emissions. However, HSC Division 25.5 requires GHGs emitted in California to be reduced to 1990 levels by 2020 and 40 percent below 1990 levels by 2030. California is on track to achieve the 2020 goal and is in the process of developing plans and strategy and regulatory frameworks to meet the 2030 goal. The Technical Advisory on CEQA and Climate Change from OPR suggests that, in absence of regulatory guidance or standards, lead agencies, such as City of Santa Ana, must undertake project-by-project analyses consistent with available guidance and current CEQA practice to ascertain project impacts under CEQA. On December 5, 2008, the

SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold for stationary source/industrial projects where the SCAQMD is lead agency. In addition to this, a GHG significance threshold of 3,000 metric tons of carbon dioxide equivalents (MT CO_2e) was proposed for residential and commercial projects. As such, the project is evaluated for consistency with: 1) relevant State and City policies affecting GHG sources of emissions; and 2) comparing project emissions to the interim GHG threshold of 3,000 MT CO_2e.

3.3 Direct or Indirect Project GHG Emissions

The City of Santa Ana has not adopted a numerical significance threshold for assessing impacts related to GHG emissions and has not formally adopted a local plan for reducing GHG emissions. Under CEQA, when no guidance exists, the lead agency may look to and assess general compliance with comparable regulatory schemes.[23] Guidance from SCAQMD will be used in order to evaluate if the Project will have a significant impact.

As previously stated, the SCAQMD released a draft guidance document regarding interim CEQA GHG significance thresholds in October 2008. SCAQMD proposed a tiered approach, whereby the level of detail and refinement needed to determine significance increases with a project's total GHG emissions. The proposed screening level of 3,000 metric tons of CO_2e ($MTCO_2e$) per year for all land use or mixed-use projects, under which project impacts are considered "less than significant." The 3,000 metric ton screening level was intended "to achieve the same policy objective of capturing 90 percent of the GHG emissions from new mixed-use or all land use development projects in the residential/commercial sectors. The threshold of 3,000 $MTCO_2e$ per year will be used for determining significance on a project level, in accordance with the Appendix G amendments discussed above.

Although the City does not have quantitative threshold for GHG emissions, the City has established goals, objectives, and policies focused on reducing energy consumption and encouraging energy efficiency from land use and transportation sectors in the City's General Plan.

Those applicable to the Project are below:

<u>Energy Element:</u>

- Goal: To reduce consumption of non-renewable energy
- Goal: To support development and utilization of new energy sources
    - Objective: Reduce transportation-related energy consumption

[23] See Protect Historic Amador Waterways v. Amador Water Agency (2004) 116 Cal. App. 4th 1099, 1107 ["'[A] lead agency's use of existing environmental standards in determining the significance of a project's environmental impacts is an effective means of promoting consistency in significance determinations and integrating CEQA environmental review activities with other environmental program planning and resolution.'"']. Lead agencies can, and often do, use regulatory agencies' performance standards. A project's compliance with these standards usually is presumed to provide an adequate level of protection for environmental resources. See, e.g., Cadiz Land Co. v. Rail Cycle (2000) 83 Cal.App.4th 74, 99 (upholding use of regulatory agency performance standard).

- Objective: Reduce land use-related energy consumption
  - Policies and Programs:
  - Encourage higher densities of housing and office (mixed-use) development to relate to areas of higher transportation access and capacity.
  - Encourage solar power and solar heat fixtures for business and residential

Circulation Element:

- Goal: Provide a full spectrum of travel alternatives for the community's residents, employees, and visitors

Conservation Element:

- Goal: Preserve, maintain, and properly use natural resources and cultural resources.
  - Objective: Conserve water resources in commercial, industrial, residential, and recreational uses.
    - Policies and Programs:
    - Implement the Mixed Use Corridor and District Center components of the Land Use element and their transit features.
    - Support local and regional land use and transportation plans that increase mass transit usage and reduce vehicle trips.

SECTION 4.0
Methodology

The evaluation of potential impacts of GHG emissions that may result from the construction and long-term operations of the Project is conducted as follows:

4.1 Emissions Estimates

To provide additional information to decision makers and the public, this GHG Technical Report provides an estimate of the GHG emissions from Project construction and operation. The following Project-related emission sources have been evaluated:

1. Construction Emission Sources – Fossil-fueled on- and off-road vehicles and equipment needed for building demolition and hauling; site grading; and building construction, paving, and architectural coating;
2. Direct Operational Emission Sources – Combustion of natural gas on-site for cooking, space heating, and water heating; and combustion of fossil fuels for lawn care and maintenance activities, and motor vehicle trips; and
3. Indirect Operational Emission Sources – Off-site electricity generation, wastewater treatment and water conveyance, and solid waste disposal.

As previously stated, the Project Site is vacant and GHG emissions analyzed will be solely from the proposed Project. Since potential impacts resulting from GHG emissions are long-term rather than acute, GHG emissions are calculated on an annual basis (metric tons per year of CO_2e). To report total GHG emissions using the CO_2e metric, the GWP ratios for CO_2, CH_4, and N_2O corresponding to the warming potential of CO_2 over a 100-year period are used in this analysis.

Construction

Construction emissions are forecasted by assuming a conservative estimate of construction activities from each phase of the Project. Construction emissions are estimated using the CalEEMod (Version 2016.3.1) software, an emissions inventory software program recommended by the SCAQMD. CalEEMod is based on outputs from OFFROAD and EMFAC, which are emissions estimation models developed by CARB and used to calculate emissions from construction activities, including off- and on-road vehicles. CalEEMod outputs construction-related GHG emissions of CO_2, CH_4, and CO_2e.

The output values used in this analysis were adjusted to be Project-specific based on equipment types and the construction schedule. These values were then applied to the same construction subphasing assumptions used in the criteria pollutant analysis (see Air Quality Technical Report) to generate GHG emissions values for each construction year.

SCAQMD's *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold*, 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."[24] The guidance 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."[25] In accordance with that SCAQMD guidance, GHG emissions from Project construction have been amortized over the 30-year lifetime of the Project.

Operations

CalEEMod was also used to estimate operational GHG emissions from electricity, natural gas, solid waste, water and wastewater, and landscaping equipment. Building electricity and natural gas usage rates were adjusted to account for current Title 24 Building Energy Efficiency Standards. CalEEMod was used to estimate mobile source emissions. CalEEMod uses CARB's updated version of the on-road vehicle emissions factor (EMFAC) model. The most recent version is EMFAC2014, which "represents CARB's current understanding of motor vehicle travel activities and their associated emission levels."[26] A summary of that methodology is provided below.

For mobile sources, CalEEMod was used to generate the vehicle miles traveled (VMT) from Project uses based on the trip rates in the traffic study.[27] The estimated VMT takes into account trip distance reductions from traffic study, its location near local job centers, and proximity to existing public transit. The estimated VMT reductions were calculated using the equations and methodologies prescribed in the California Air Pollution Control Officer's Association (CAPCOA) guidance document, *Quantifying Greenhouse Gas Mitigation Measures*, which provides emission reduction calculation formulas for transportation characteristics and measures.

With regard to energy demand, the consumption of fossil fuels to generate electricity and to provide heating and hot water generates GHG emissions. Energy demand rates were estimated based on specific square footage of the commercial buildings, and number of dwelling units, as well as predicted water supply needs for these uses. However, since the data from the CEUS is from 2002, correction factors were incorporated into CalEEMod to account for the current version of the Title 24 Building Energy Efficiency Standards in effect. The Project electricity demands are supplied by Southern California Edison (SCE). CalEEMod provides default intensity factors for CO_2, CH_4, and N_2O for SCE and calculates an overall CO_2e intensity factor. The default CO_2 intensity factor is based on year 2012 and was adjusted to reflect an intensity

24 South Coast Air Quality Management District, Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold, October 2008. Available at http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-6/ghg-meeting-6-guidance-document-discussion.pdf?sfvrsn=2. Accessed May 2017.

25 Ibid.

26 California Air Resources Board, Mobile Source Emissions Inventory. Available at http://www.arb.ca.gov/msei/categories.htm#emfac2014. Accessed June 2017.

27 Traffic Impact Analysis for The Madison. Linscott, Lin, and Greenspan, Engineers October 2016

factor that represents a 2019 scenario. By 2020, 41.4 percent of the energy SCE provides to its customers must be produced from sources of renewable energy.[28] For 2012, SCE had 20.6 percent renewables and this was used to back calculate a CO_2 intensity factor where SCE had zero percent renewables. This value was then adjusted to reflect a CO_2 intensity factor with 41.4 percent renewables in 2020. With the values from 2012 and 2020, a CO_2 intensity factor for 2019 was determined using interpolation.

GHG emissions from solid waste disposal, water and wastewater, and equipment used to maintain landscaping, such as lawnmowers and trimmers were estimated using CalEEMod. The Project would not include fireplaces in residential units. Also, the and The Project would be served by and contract with waste collection services that would meet and be consistent with City goals, policies, and objectives for waste diversion, which is approximately 68 percent as of 2014[29].

Emissions calculations include credits or reductions for the Project Design Features (PDF) and GHG reducing measures, some of which are required by regulation, such as compliance with SCAQMD rules and regulations and reductions in energy and water demand. Because the Project is subject to the City's Green Building Code, PDFs will be incorporated consistent with the minimum requirements.

Operational year 2019 would have the maximum emissions for the Project and over time Project emissions would decrease. GHG emissions from mobile and energy sources beyond 2019 would continue to decrease due to increasing renewable portfolio standards of utility providers, increasing building energy efficiency requirements, and improvements in mobile fleets.

4.2 Consistency with Greenhouse Gas Reduction Plan, Policies, and Actions

The Project's GHG emissions are also evaluated by assessing the Project's consistency with applicable GHG reduction strategies and local actions adopted by the City. As discussed previously, the City has established goals, objectives, and policies to reduce energy consumption from the land use and transportation sectors, thus reducing GHG emissions.

The *CEQA Guidelines* encourage lead agencies to make use of programmatic mitigation plans and programs from which to tier, when they perform individual project analyses. The City does not have a programmatic mitigation plan to tier from, such as a Greenhouse Gas Emissions Reduction Plan as recommended in the relevant amendments to the *CEQA Guidelines*. However, the City has elements in its General Plan that focus on encouraging energy efficiency and reducing energy consumption from land use and transportation sectors.

[28] California Public Utilities Commission. *California Renewables Portfolio Standards.* http://www.cpuc.ca.gov/RPS_Homepage/ Accessed June 2017.

[29] City of Santa Ana Recycling Programs. http://www.ci.santa-ana.ca.us/green/RecyclingPrograms.asp. Accessed June 2017.

SECTION 5.0
Environmental Impacts

GHG-1: The Project would result in a significant impact if the Project would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, based on any applicable threshold of significance.

Impact Statement GHG-1: The Project would generate GHG emissions due to construction and operational activities; however, its annual GHG emissions, generated directly and indirectly, would be less than the screening level of 3,000 MT CO_2e, therefore the Project would have a less than significant impact.

5.1 Greenhouse Gas Emissions

Construction

As explained above, the emissions of GHGs associated with construction of the Project were calculated for each year of construction activity. Although construction-related GHGs are one-time emissions, an assessment of the Project emissions should generally include construction emissions. The SCAQMD recommends that a project's construction-related GHG emissions be amortized over the project's 30-year lifetime in order to include these emissions as part of the 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 recommendation, the Project's estimated construction GHG emissions have been amortized over a 30-year period and are included in the annualized operational GHG emissions. Results of this analysis are presented in **Table 1**, *Project Construction Greenhouse Gas Emissions*. The construction GHG emissions are estimated 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. A complete listing of the equipment by phase, emission factors, and calculation parameters used in this analysis is included within the emissions calculation worksheets that are provided in Appendix A.

TABLE 1
PROJECT CONSTRUCTION GREENHOUSE GAS EMISSIONS

Emission Source	CO_2e (Metric Tons) [a,b]
Construction Year 2017	143
Construction Year 2018	813
Construction Year 2019	545
Total Construction Emissions	**1,501**

TABLE 1
PROJECT CONSTRUCTION GREENHOUSE GAS EMISSIONS

Amortized Construction Emissions (30-years)	**50**

[a] Totals may not add up exactly due to rounding in the modeling calculations Detailed emissions calculations are provided in Appendix A.
[b] CO_2e emissions are calculated using the GWP values from the IPCC Fourth Assessment Report.

Source: ESA, 2017

Operations

The long-term operational emissions from the Project were estimated using CalEEMod. The Project must comply with the portions of City's Green Building Code applicable to residential and mixed-use 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, these include: installation of ENERGY STAR dishwashers and refrigerators in residential units, reduced building energy usage consistent with 2016 Title 24 Building Energy Efficiency Standards, reductions for indoor water usage by utilizing low-flow fixtures, and reducing outdoor water usage by using artificial turf in portions of landscaping areas and water-efficient irrigation systems. In addition, energy calculations from the parking structure also take into account the City's Green Building Program requirement of using motion sensing lighting for new parking structures. Use of motion sensing lights in the proposed parking structure, which would be implemented as a Project Design Feature and is consistent with Title 24 requirements, would reduce energy usage of the parking structure by approximately 50 percent and resulting GHG emissions. Additional reductions are based on the Project's land use characteristics and reductions are quantified using CAPCOA methodology. Details of these calculations are provided in Appendix A.

Maximum annual GHG emissions resulting from motor vehicles, energy, water conveyance, and waste sources were calculated for the expected first operating year, 2019. The maximum first operating year GHG emissions from operation of the Project are shown in **Table 2**. The Project's emissions were then compared to the screening level of 3,000 MT CO2e. As Table 2 reports, the Project's GHG emissions would be below the screening threshold and would be less than significant. As stated previously, 2019 would have the maximum annual GHG emission, however, Project GHG emissions beyond 2019 from mobile and energy sources would continue to decrease due to increasing requirements and standards for mobile fleets, utility providers, and building energy efficiency.

TABLE 2
UNMITIGATED PROJECT GREENHOUSE GAS EMISSIONS

Emission Source	Metric Tons CO_2e per year
Opening Operational Year (2019)	
Electricity	415
Natural Gas	164

Mobile Sources	2,174
Solid Waste	23
Water	100
Area (Landscaping Equipment)	6
Amortized Construction Emissions	50
Total Project GHG Emissions	**2,931**
Significance Threshold	3,000
Above Threshold?	No

[a] Totals may not add up exactly due to rounding in the modeling calculations. Detailed emissions calculations are provided in Appendix A.

Source: ESA, 2017

GHG-2: The Project would result in a significant impact if the Project would conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

Impact Statement GHG-2: The Project would be consistent with applicable plans, policies, and regulations intended to reduce greenhouse gas emissions. Therefore, Project impacts would be less than significant.

5.2 Consistency with State Plans, Policies, or Regulations

Consistency with AB 32

In support of AB 32, the state has promulgated specific laws aimed at GHG reductions applicable to the Project. The heating, ventilation, and air conditioning (HVAC) system would be sized and designed in compliance with the CALGreen Code and the City's Green Building Program to maximize energy efficiency caused by heat loss and heat gain. The Project Site is also located in an established residential and commercial area with access to public transportation, which minimizes trips and trip lengths reducing mobile source emissions. Therefore, the Project would be consistent with State efforts to reduce motor vehicle emissions and congestion. The Project would generate GHG emissions due to construction and operational activities; however, its annual GHG emissions, would be generated due to development located and designed to be consistent with relevant goals and actions designed to encourage development that results in the efficient use of public and private resources. Therefore, the Project's GHG emissions and associated impacts would be less than significant.

Project consistency with Regional and Local Trip and VMT Reduction Goals, Actions, and Recommendations.

The significance of the Project's GHG emissions was first evaluated based on whether the emissions would be generated in connection with development located and designed consistent

with relevant regional and local goals, actions, and recommendations designed to encourage development to reduce trips and VMTs. Transportation-related GHG emissions are the largest sector of emissions from the Project. This Project characteristic is consistent with the assumption in many regional plans, such as the SCAG RTP/SCS, which recognizes that the transportation sector is the largest contributor to the State's GHG emissions. Consistent with SCAG's RTP/SCS alignment of transportation, land use, and housing strategies, the Project would accommodate projected increases in population, households, employment, and travel demand by implementing smart land use strategies. As discussed previously, the Project Site is an infill location close to jobs, housing, shopping and entertainment uses and in close proximity to existing public transit stops, which would result in reduced VMT, as compared to a project of similar size and with similar land uses at a location without close and walkable access to off-site destinations and public transit stops. Moreover, the RTP/SCS states that while "population and job growth would induce land use change (development projects) and increase VMT, and would result in direct and indirect GHG emissions," the RTP/SCS would "supports sustainable growth through a more compact, infill, and walkable development pattern."[30]

Project Consistency with City Goals and Actions

The significance of the Project's GHG emissions is also evaluated based on whether they would be generated in connection with a development location and design consistent with the applicable City's goals and actions. Although the City does not have specific GHG reduction requirements, its General Plan has elements that aim to improve energy efficiency and reduce energy consumption from land use and transportation sectors. The Project is a mixed-development with residential and retail/commercial space. The design and location of the Project would be consistent with relevant goals and actions designed to encourage development that results in the efficient use of public and private resources. As previously discussed VMT reduction would be consistent with LUT-4 and LUT-5 from the CAPCOA guidelines. VMT reductions were based on the Project's land use characteristics. The Project is conveniently located near public transit systems including the Santa Ana Regional Transportation Center, it is located in close proximity to business centers and is 1.5 miles from Downtown Santa Ana, a major job center. The Project itself will provide a fitness center for its residents, as well, as retail and commercial shops on-site, which would reduce VMT and GHG emissions.

Consistency with GHG reduction strategies is an important priority and reasonable reduction efforts should be taken. **Table 3**, *Project Consistency with Applicable Greenhouse Gas Reduction Strategies*, contains a list of GHG-reducing strategies potentially applicable to the Project, and the consistency of the Project with these strategies. Based on design features of the Project, the Project would be consistent with the City's General Plan goals regarding energy use and consumption as shown in **Table 4**. Therefore, the Project would result in less than significant GHG emissions and impacts.

[30] Southern California Association of Governments, Draft Program Environmental Impact Report – 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy, (2015), page 3.8-35

TABLE 3
PROJECT CONSISTENCY WITH APPLICABLE GREENHOUSE GAS REDUCTION STRATEGIES

Source	Category / Description	Consistency Analysis
California Green Building Standards Code Requirements	All bathroom exhaust fans shall be ENERGY STAR compliant.	**Consistent.** The Project would utilize energy efficiency appliances and equipment and would meet or exceed the energy standards in the Title 24 Building Energy Efficiency Standards.
	HVAC Systems will be designed to meet ASHRAE standards.	**Consistent.** The Project would utilize energy efficiency appliances and equipment and would meet or exceed the energy standards in ASHRAE 90.1-2013, Appendix G and the Title 24 Building Energy Efficiency Standards.
	Energy commissioning shall be performed for buildings larger than 10,000 square feet.	**Consistent.** The Project would meet this requirement as part of its compliance with the City's requirements.
	Air filtration systems are required to meet a minimum of MERV 8 or higher.	**Consistent.** The Project would meet or exceed this requirement as part of its compliance with the City's requirements, and the CALGreen Code.
	Refrigerants used in newly installed HVAC systems shall not contain any CFCs.	**Consistent.** The Project would meet this requirement as part of its compliance with the City's requirements and the CALGreen Code.
	Parking spaces shall be designed for carpool or alternative fueled vehicles. Up to eight percent of total parking spaces will be designed for such vehicles.	**Consistent.** The Project would meet this requirement as part of its compliance with the City's requirements and the CALGreen Code.
	Long-term and short-term bike parking shall be provided for up to five percent of vehicle trips.	**Consistent.** The Project would meet this requirement as part of its compliance with the City's requirements and the CALGreen Code.
	Stormwater Pollution Prevention Plan (SWPPP) required.	**Consistent.** The Project would meet this requirement as part of its compliance with the City's requirements and the CALGreen Code.
	Indoor water usage must be reduced by 20% compared to current California Building Code Standards for maximum flow.	**Consistent.** The Project would meet this requirement as part of its compliance with the City's requirements and the CALGreen Code
	All irrigation controllers must be installed with weather sensing or soil moisture sensors.	**Consistent.** The Project would meet this requirement as part of its compliance with the City's requirements and the CALGreen Code.
	Wastewater usage shall be reduced by 20 percent compared to current California Building Standards.	**Consistent.** The Project would meet or exceed this requirement as part of its compliance with the City's requirements and the CALGreen Code.
	Requires a minimum of 50 percent recycle or reuse of nonhazardous construction and demolition debris.	**Consistent.** The Project would meet or exceed this requirement as part of its compliance with the City's requirements and the CALGreen Code.
	Requires documentation of types of waste recycled, diverted or reused.	**Consistent.** The Project would meet this requirement as part of its compliance with the City's requirements and the CALGreen Code.
	Requires use of low VOC coatings consistent with AQMD Rule 1168.	**Consistent.** The Project would be consistent with this regulation and would meet or exceed the low VOC coating requirements.
	100 percent of vegetation, rocks, soils from land clearing shall be recycled or stockpiled on-site.	**Consistent.** The Project would meet this requirement as part of its compliance with the City's requirements and the CALGreen Code.

SOURCE: ESA, 2017.

TABLE 4
PROJECT CONSISTENCY WITH CITY'S GENERAL PLAN GOALS FOR ENERGY EFFICIENCY AND CONSUMPTION

Source	Category / Description	Consistency Analysis
Energy Element	**Goal**: To reduce consumption of non-renewable energy	**Consistent:** Residents of the Project will have convenient accessibility to existing transit systems, be located near local job centers, and have on-site retail shopping. These features would lead to reductions in vehicle trips and VMT, thus reducing consumption of mobile fuels. The Project will use ENERGY STAR dishwashers and refrigerators in residential units, as well as lighting sensors in its parking structure, thus reducing electricity consumption
Energy Element	**Goal:** To support development and utilization of new energy sources **Objectives:** Reduce transportation-related energy consumption and reduce land use-related energy consumption **Policies and Programs:** Encourage higher densities of housing and office (mixed-use) development to relate to areas of higher transportation access and capacity.	**Consistent:** Residents of the mixed-use Project will have convenient accessibility to existing transit systems, be located near local job centers, and have on-site retail shopping. These features would lead to reductions in vehicle trips and VMT, thus reducing consumption of mobile fuels.
Circulation Element	**Goal** :Provide a full spectrum of travel alternatives for the community's residents, employees, and visitors.	**Consistent.** The Project Site is served by the Orange County Transportation Authority (OCTA). OCTA provided multiple bus routes near the Project with Route 64 located 0.10 miles from Project Site at Cabrillo Street and East First Avenue, Route 463 of the Metrolink Stationlink Route with service to the Santa Ana Regional Transportation Center (SARTC) located 0.10 miles north of the Project Site at East 4th Street and North Cabrillo; Route 71 located 0.40 miles east of the Project Site at North Tustin Avenue and East 1st Street. As previously stated, Route 463 provides service to the SARTC located 1 mile from the Project Site.
Conservation Element	**Goal:** Preserve, maintain, and properly use natural resources and cultural resources. **Objective:** Conserve water resources in commercial, industrial, residential, and recreational uses. **Programs and Policies:** Implement the Mixed Use Corridor and District Center components of the Land Use element and their transit features. Support local and regional land use and transportation plans that increase mass transit usage and reduce vehicle trips.	**Consistent:** The Project is a mixed-use development located near local job centers and residents will have access to convenient public transportation. The Project would be consistent with the City's waste and recycling programs.

Consistency with Executive Orders S-3-05 and B-30-15

Executive Orders S-3-05 and B-30-15 establish goals for reducing GHG emissions. Executive Order S-3-05's goal to reduce GHG emissions to 1990 levels by 2020 was codified by the Legislature as AB 32. As analyzed above, the Project would be consistent with AB 32. Therefore, the Project does not conflict with the 2020 component of Executive Orders S-3-05 and B-30-15.

Executive Orders S-3-05 and B-30-15 also establish goals to reduce GHG emissions to 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050. These goals have not yet been codified by the Legislature. However, studies have shown that, to meet the 2030 and 2050 targets, aggressive technologies in the transportation and energy sectors, including electrification and the decarbonization of fuel, will be required. In its Climate Change Scoping Plan, CARB acknowledged that the "measures needed to meet the 2050 goal are too far in the future to define in detail."[31] In the First Update, however, CARB generally described the type of activities required to achieve the 2050 target: "energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and rapid market penetration of efficiency and clean energy technologies that requires significant efforts to deploy and scale markets for the cleanest technologies immediately."[32] Due to the technological shifts required and the unknown parameters of the regulatory framework in 2030 and 2050, quantitatively analyzing the Project's impacts further relative to the 2030 and 2050 goals currently is speculative for purposes of CEQA.

Although the Project's emissions levels in 2030 and 2050 cannot yet be reliably quantified, statewide efforts are underway to facilitate the State's achievement of those goals and it is reasonable to expect the Project's emissions level to decline as the regulatory initiatives identified by CARB in the First Update are implemented, and other technological innovations occur. Stated differently, the Project's emissions total at build-out represents the maximum emissions inventory for the Project as California's emissions sources are being regulated (and foreseeably expected to continue to be regulated in the future) in furtherance of the State's environmental policy objectives. As such, given the reasonably anticipated decline in Project emissions once fully constructed and operational, the Project would be consistent with the Executive Orders' goals.

The Climate Change Scoping Plan recognizes that AB 32 establishes an emissions reduction trajectory that will allow California to achieve the more stringent 2050 target: "These [greenhouse gas emission reduction] measures also put the state on a path to meet the long-term 2050 goal of reducing California's greenhouse gas emissions to 80 percent below 1990 levels. This trajectory is consistent with the reductions that are needed globally to stabilize the climate."[33] Also, CARB's First Update provides that it "lays the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050," and many of the emission reduction strategies recommended by CARB would serve to reduce the Project's post-2020 emissions level to the extent applicable by law through the energy, transportation, eater, and waste management sectors.[34]

The Project's post-2020 emissions trajectory is expected to follow a declining trend, consistent with the establishment of the 2030 and 2050 targets. Therefore, as the Project would be consistent

[31] CARB, Climate Change Scoping Plan, p. 117, December 2008

[32] CARB, First Update, p. 32, May 2014

[33] CARB, Climate Change Proposed Scoping Plan, p. 15, October 2008

[34] CARB, First Update, p. 4, May 2014. See also id. at pp. 32–33 [recent studies show that achieving the 2050 goal will require that the "electricity sector will have to be essentially zero carbon; and that electricity or hydrogen will have to power much of the transportation sector, including almost all passenger vehicles."]

with State applicable plans, policies and regulations adopted for the purpose of reducing GHG emissions, impacts regarding State GHG reduction plans would be less than significant.

SECTION 6.0
Cumulative Impacts

The emissions of a single project will not cause or exacerbate global climate change. A substantial increase in GHG emissions from multiple projects throughout the world could possibly result in a cumulative impact with respect to global climate change. CEQA requires that lead agencies consider evaluating the cumulative impacts of GHGs from even relatively small (on a global basis) increases in GHG emissions. Small contributions to this cumulative impact (from which significant effects are occurring and are expected to worsen over time) may be potentially considerable, and therefore, significant. A cumulatively considerable impact is the impact of a proposed project in addition to the related projects. However, in the case of global climate change, the proximity of the project to other GHG-generating activities is not directly relevant to the determination of a cumulative impact. Although the State requires MPOs and other planning agencies to consider how region-wide planning decisions can impact global climate change, there is currently no established non-speculative method to assess the cumulative impact of proposed independent private-party development projects.

Given that GHG emissions are cumulative in nature, and as detailed in the impact analysis, the Project would generate GHG emissions consistent with applicable reduction plans and policies and would be below the 3,000 MT CO_2e threshold, GHG emission impacts are cumulative in nature, thus the Project's incremental contribution to cumulatively significant GHG emissions would be less than cumulatively considerable, and impacts would be less than significant.

SECTION 7.0
Summary of Results

GHG emissions associated with the Project have been evaluated to determine the level of impact from construction activities and future operations of the Project. The Project would be consistent with the goals in the Energy Element of the City's General Plan which would reduce energy consumption and GHG emissions, consistent with applicable SCAG RTP/SCS policies intended to meet the region's GHG reduction targets as assigned by CARB. Thus the Project's GHG emissions are consistent with regulatory schemes intended to reduce GHG emissions.

Construction of the Project would result in temporary and incremental increases to 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. GHG emissions associated with Project operations would be generated by the consumption of electricity and natural gas and by the operation of on-road vehicles.

The Project would be consistent with applicable GHG reduction strategies recommended by the State. In addition, the Project would support and be consistent with relevant and applicable GHG emission reduction strategies in SCAG's Sustainable Communities Strategy, including providing residences, including retail uses in an urban infill location and within a relatively short distance of existing transit stops; and providing employment near current transit stops and neighborhood commercial centers. The Project also is consistent with the City's Goals for energy efficiency and reducing energy consumption.

The GHG emissions analysis in this GHG Technical Report was performed in accordance with SCAQMD and CARB guidance developed in compliance with, and as a result of, those regulations and programs. The result of the analysis of the Project's potential impacts in terms of GHG and global climate change indicates that the Project-related GHG emissions would not be expected to cause a direct physical change in the environment. Therefore, the Project would result in less than significant GHG emissions based on its consistency with local and regional GHG emissions reduction strategies.

Project GHG emissions are below the 3,000 MT CO_2e threshold and consistent with applicable reduction plans, and given that GHG emission impacts are cumulative in nature, the Project's GHG emissions would be less than significant.

The Madison

Greenhouse Gas Technical Report
Appendix A, Greenhouse Gas Worksheets

A.1 Construction Emissions

- CalEEMod Construction Emissions Output (Annual)

A.2 Operational Emissions

- CalEEMod Operational Emissions Output (Annual)
- GHG Summary

A.1 Construction Emissions

- CalEEMod Construction Emissions Output (Annual)

The Madison Construction

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	445.00	Space	4.00	178,000.00	0
Apartments Mid Rise	260.00	Dwelling Unit	6.84	260,000.00	744
Regional Shopping Center	2.51	1000sqft	0.06	2,507.00	0
Regional Shopping Center	6.96	1000sqft	0.16	6,957.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Construction Assumptions (072717)

Off-road Equipment - Construction Assumptions

Off-road Equipment - Construction Assumptions

Off-road Equipment - Construction Assumptions

Off-road Equipment - Construction Assumptions

Off-road Equipment - Construction Assumptions

Off-road Equipment - Construction Assumptions

Off-road Equipment - Construction Assumptions

Off-road Equipment - Construction Assumptions

Trips and VMT - added 3 trips to workers for water truck

Grading - Construction Assumptions

Architectural Coating -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	4,732.00	4,534.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	14,196.00	13,602.00
tblArchitecturalCoating	ConstArea_Parking	10,680.00	11,472.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	175,500.00	186,300.00
tblArchitecturalCoating	ConstArea_Residential_Interior	526,500.00	558,900.00
tblAreaCoating	Area_Nonresidential_Exterior	4732	4534
tblAreaCoating	Area_Nonresidential_Interior	14196	13602
tblAreaCoating	Area_Parking	10680	11472
tblAreaCoating	Area_Residential_Exterior	175500	321300
tblAreaCoating	Area_Residential_Interior	526500	963900
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblFireplaces	NumberGas	221.00	404.60
tblFireplaces	NumberNoFireplace	26.00	47.60
tblFireplaces	NumberWood	13.00	23.80
tblFleetMix	FleetMixLandUseSubType	Enclosed Parking with Elevator	Apartments Mid Rise
tblFleetMix	FleetMixLandUseSubType	Apartments Mid Rise	Enclosed Parking with Elevator
tblGrading	AcresOfGrading	21.50	2.80
tblGrading	MaterialExported	0.00	10,000.00
tblLandUse	BuildingSpaceSquareFeet	2,510.00	2,507.00
tblLandUse	BuildingSpaceSquareFeet	6,960.00	6,957.00
tblLandUse	LandUseSquareFeet	2,510.00	2,507.00
tblLandUse	LandUseSquareFeet	6,960.00	6,957.00

tblOffRoadEquipment	HorsePower	247.00	84.00
tblOffRoadEquipment	LoadFactor	0.40	0.74
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	PhaseName		Architectural Coating
tblOffRoadEquipment	PhaseName		Foundations/Parking Structure/Utils
tblOffRoadEquipment	PhaseName		Foundations/Parking Structure/Utils
tblOffRoadEquipment	PhaseName		Concrete Pour
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2018	2019
tblSolidWaste	SolidWasteGenerationRate	119.60	218.96
tblSolidWaste	SolidWasteGenerationRate	9.94	9.52
tblTripsAndVMT	HaulingTripNumber	1,250.00	714.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	59.00	200.00
tblTripsAndVMT	WorkerTripNumber	5.00	9.00
tblTripsAndVMT	WorkerTripNumber	15.00	18.00

tblTripsAndVMT	WorkerTripNumber	265.00	40.00
tblTripsAndVMT	WorkerTripNumber	265.00	40.00
tblTripsAndVMT	WorkerTripNumber	265.00	20.00
tblTripsAndVMT	WorkerTripNumber	265.00	268.00
tblTripsAndVMT	WorkerTripNumber	53.00	56.00
tblTripsAndVMT	WorkerTripNumber	5.00	8.00
tblTripsAndVMT	WorkerTripNumber	5.00	8.00
tblWater	IndoorWaterUseRate	16,940,046.66	31,013,316.20
tblWater	IndoorWaterUseRate	701,466.78	671,837.77
tblWater	OutdoorWaterUseRate	10,679,594.63	19,551,873.25
tblWater	OutdoorWaterUseRate	429,931.25	411,771.54
tblWoodstoves	NumberCatalytic	13.00	23.80
tblWoodstoves	NumberNoncatalytic	13.00	23.80

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					
2017	0.0914	1.0723	0.6029	1.5200e-003	0.2435	0.0458	0.2893	0.1234	0.0426	0.1660	0.0000	142.2652	142.2652	0.0267	0.0000	142.9329
2018	0.4448	3.9258	3.2239	8.8400e-003	0.4041	0.1554	0.5595	0.1073	0.1475	0.2548	0.0000	810.2791	810.2791	0.0959	0.0000	812.6769
2019	1.2630	2.2500	2.4325	6.0200e-003	0.3038	0.0986	0.4024	0.0814	0.0927	0.1740	0.0000	543.8932	543.8932	0.0626	0.0000	545.4580
Maximum	**1.2630**	**3.9258**	**3.2239**	**8.8400e-003**	**0.4041**	**0.1554**	**0.5595**	**0.1234**	**0.1475**	**0.2548**	**0.0000**	**810.2791**	**810.2791**	**0.0959**	**0.0000**	**812.6769**

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					
2017	0.0914	1.0723	0.6029	1.5200e-003	0.1155	0.0458	0.1613	0.0536	0.0426	0.0962	0.0000	142.2651	142.2651	0.0267	0.0000	142.9328
2018	0.4448	3.9258	3.2239	8.8400e-003	0.4041	0.1554	0.5595	0.1073	0.1475	0.2548	0.0000	810.2787	810.2787	0.0959	0.0000	812.6766
2019	1.2630	2.2500	2.4325	6.0200e-003	0.3038	0.0986	0.4024	0.0814	0.0927	0.1740	0.0000	543.8930	543.8930	0.0626	0.0000	545.4578
Maximum	**1.2630**	**3.9258**	**3.2239**	**8.8400e-003**	**0.4041**	**0.1554**	**0.5595**	**0.1073**	**0.1475**	**0.2548**	**0.0000**	**810.2787**	**810.2787**	**0.0959**	**0.0000**	**812.6766**

	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**	**13.45**	**0.00**	**10.23**	**22.38**	**0.00**	**11.74**	**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	**9-5-2017**	**12-4-2017**	0.8103	0.8103
2	**12-5-2017**	**3-4-2018**	0.0627	0.0627
7	**3-5-2019**	**6-4-2019**	0.1167	0.1167
8	**6-5-2019**	**9-4-2019**	0.9914	0.9914
		Highest	0.9914	0.9914

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	9/5/2017	10/10/2017	5	26	1
2	Excavation/Grading	Grading	10/11/2017	12/10/2017	5	43	2
3	Foundations/Parking Structure/Utils	Building Construction	12/11/2017	7/7/2018	5	148	3

4	Concrete Pour	Building Construction	7/8/2018	7/9/2018	5	1	4
5	Building (Framing)	Building Construction	7/10/2018	8/23/2019	5	294	5
6	Architectural Coating	Architectural Coating	5/26/2019	8/23/2019	5	65	7
7	Paving	Paving	7/23/2019	8/23/2019	5	24	6

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 4

Residential Indoor: 558,900; Residential Outdoor: 186,300; Non-Residential Indoor: 13,602; Non-Residential Outdoor: 4,534; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Excavation/Grading	Excavators	2	8.00	158	0.38
Excavation/Grading	Graders	1	8.00	187	0.41
Excavation/Grading	Rubber Tired Dozers	1	8.00	84	0.74
Excavation/Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Foundations/Parking Structure/Utils	Bore/Drill Rigs	1	8.00	221	0.50
Foundations/Parking Structure/Utils	Pumps	2	8.00	84	0.74
Foundations/Parking Structure/Utils	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Concrete Pour	Pumps	2	24.00	84	0.74
Building (Framing)	Cranes	1	8.00	231	0.29
Building (Framing)	Forklifts	2	8.00	89	0.20
Building (Framing)	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building (Framing)	Welders	2	8.00	46	0.45
Architectural Coating	Aerial Lifts	1	8.00	63	0.31
Architectural Coating	Air Compressors	1	8.00	78	0.48
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	9.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Excavation/Grading	6	18.00	0.00	714.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Foundations/Parking Structure/Utils	5	40.00	59.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Foundations/Parking Structure/Utils	5	40.00	59.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Concrete Pour	2	20.00	200.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building (Framing)	7	268.00	59.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	2	56.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	2	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	2	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0783	0.0000	0.0783	0.0430	0.0000	0.0430	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0201	0.2133	0.0913	1.5000e-004		0.0115	0.0115		0.0106	0.0106	0.0000	14.0604	14.0604	4.3100e-003	0.0000	14.1681
Total	**0.0201**	**0.2133**	**0.0913**	**1.5000e-004**	**0.0783**	**0.0115**	**0.0898**	**0.0430**	**0.0106**	**0.0536**	**0.0000**	**14.0604**	**14.0604**	**4.3100e-003**	**0.0000**	**14.1681**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3000e-004	3.4300e-003	9.2000e-004	1.0000e-005	1.6000e-004	3.0000e-005	1.9000e-004	5.0000e-005	3.0000e-005	8.0000e-005	0.0000	0.6515	0.6515	5.0000e-005	0.0000	0.6527
Worker	7.0000e-004	5.8000e-004	6.2300e-003	1.0000e-005	1.2800e-003	1.0000e-005	1.2900e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.2670	1.2670	5.0000e-005	0.0000	1.2682
Total	**8.3000e-004**	**4.0100e-003**	**7.1500e-003**	**2.0000e-005**	**1.4400e-003**	**4.0000e-005**	**1.4800e-003**	**3.9000e-004**	**4.0000e-005**	**4.3000e-004**	**0.0000**	**1.9184**	**1.9184**	**1.0000e-004**	**0.0000**	**1.9209**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0305	0.0000	0.0305	0.0168	0.0000	0.0168	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0201	0.2133	0.0913	1.5000e-004		0.0115	0.0115		0.0106	0.0106	0.0000	14.0604	14.0604	4.3100e-003	0.0000	14.1681
Total	**0.0201**	**0.2133**	**0.0913**	**1.5000e-004**	**0.0305**	**0.0115**	**0.0420**	**0.0168**	**0.0106**	**0.0273**	**0.0000**	**14.0604**	**14.0604**	**4.3100e-003**	**0.0000**	**14.1681**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3000e-004	3.4300e-003	9.2000e-004	1.0000e-005	1.6000e-004	3.0000e-005	1.9000e-004	5.0000e-005	3.0000e-005	8.0000e-005	0.0000	0.6515	0.6515	5.0000e-005	0.0000	0.6527
Worker	7.0000e-004	5.8000e-004	6.2300e-003	1.0000e-005	1.2800e-003	1.0000e-005	1.2900e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.2670	1.2670	5.0000e-005	0.0000	1.2682
Total	**8.3000e-004**	**4.0100e-003**	**7.1500e-003**	**2.0000e-005**	**1.4400e-003**	**4.0000e-005**	**1.4800e-003**	**3.9000e-004**	**4.0000e-005**	**4.3000e-004**	**0.0000**	**1.9184**	**1.9184**	**1.0000e-004**	**0.0000**	**1.9209**

3.3 Excavation/Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1315	0.0000	0.1315	0.0714	0.0000	0.0714	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0403	0.4600	0.2885	5.0000e-004		0.0234	0.0234		0.0215	0.0215	0.0000	46.2954	46.2954	0.0142	0.0000	46.6500
Total	**0.0403**	**0.4600**	**0.2885**	**5.0000e-004**	**0.1315**	**0.0234**	**0.1549**	**0.0714**	**0.0215**	**0.0929**	**0.0000**	**46.2954**	**46.2954**	**0.0142**	**0.0000**	**46.6500**

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	3.6000e-003	0.1229	0.0227	2.8000e-004	6.1400e-003	6.5000e-004	6.7800e-003	1.6900e-003	6.2000e-004	2.3000e-003	0.0000	27.7662	27.7662	1.9900e-003	0.0000	27.8160
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	2.3100e-003	1.9300e-003	0.0206	5.0000e-005	4.2500e-003	4.0000e-005	4.2800e-003	1.1300e-003	3.0000e-005	1.1600e-003	0.0000	4.1907	4.1907	1.6000e-004	0.0000	4.1947

Total	**5.9100e-003**	**0.1248**	**0.0433**	**3.3000e-004**	**0.0104**	**6.9000e-004**	**0.0111**	**2.8200e-003**	**6.5000e-004**	**3.4600e-003**	**0.0000**	**31.9570**	**31.9570**	**2.1500e-003**	**0.0000**	**32.0107**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0513	0.0000	0.0513	0.0279	0.0000	0.0279	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0403	0.4600	0.2885	5.0000e-004		0.0234	0.0234		0.0215	0.0215	0.0000	46.2954	46.2954	0.0142	0.0000	46.6500
Total	**0.0403**	**0.4600**	**0.2885**	**5.0000e-004**	**0.0513**	**0.0234**	**0.0747**	**0.0279**	**0.0215**	**0.0494**	**0.0000**	**46.2954**	**46.2954**	**0.0142**	**0.0000**	**46.6500**

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	3.6000e-003	0.1229	0.0227	2.8000e-004	6.1400e-003	6.5000e-004	6.7800e-003	1.6900e-003	6.2000e-004	2.3000e-003	0.0000	27.7662	27.7662	1.9900e-003	0.0000	27.8160
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	2.3100e-003	1.9300e-003	0.0206	5.0000e-005	4.2500e-003	4.0000e-005	4.2800e-003	1.1300e-003	3.0000e-005	1.1600e-003	0.0000	4.1907	4.1907	1.6000e-004	0.0000	4.1947
Total	**5.9100e-003**	**0.1248**	**0.0433**	**3.3000e-004**	**0.0104**	**6.9000e-004**	**0.0111**	**2.8200e-003**	**6.5000e-004**	**3.4600e-003**	**0.0000**	**31.9570**	**31.9570**	**2.1500e-003**	**0.0000**	**32.0107**

3.4 Foundations/Parking Structure/Utils - 2017

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	0.0163	0.1505	0.1095	2.2000e-004		9.2100e-003	9.2100e-003		8.8500e-003	8.8500e-003	0.0000	19.3613	19.3613	4.0700e-003	0.0000	19.4629
Total	**0.0163**	**0.1505**	**0.1095**	**2.2000e-004**		**9.2100e-003**	**9.2100e-003**		**8.8500e-003**	**8.8500e-003**	**0.0000**	**19.3613**	**19.3613**	**4.0700e-003**	**0.0000**	**19.4629**

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	4.3600e-003	0.1167	0.0313	2.3000e-004	9.5300e-003	9.9000e-004	0.0105	2.5800e-003	9.5000e-004	3.5300e-003	0.0000	22.1754	22.1754	1.6600e-003	0.0000	22.2169
Worker	3.5900e-003	2.9900e-003	0.0319	7.0000e-005	0.0123	6.0000e-005	0.0123	3.1500e-003	5.0000e-005	3.2000e-003	0.0000	6.4973	6.4973	2.5000e-004	0.0000	6.5034
Total	**7.9500e-003**	**0.1197**	**0.0632**	**3.0000e-004**	**0.0218**	**1.0500e-003**	**0.0229**	**5.7300e-003**	**1.0000e-003**	**6.7300e-003**	**0.0000**	**28.6727**	**28.6727**	**1.9100e-003**	**0.0000**	**28.7203**

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	0.0163	0.1505	0.1095	2.2000e-004		9.2100e-003	9.2100e-003		8.8500e-003	8.8500e-003	0.0000	19.3612	19.3612	4.0700e-003	0.0000	19.4629
Total	**0.0163**	**0.1505**	**0.1095**	**2.2000e-004**		**9.2100e-003**	**9.2100e-003**		**8.8500e-003**	**8.8500e-003**	**0.0000**	**19.3612**	**19.3612**	**4.0700e-003**	**0.0000**	**19.4629**

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	4.3600e-003	0.1167	0.0313	2.3000e-004	9.5300e-003	9.9000e-004	0.0105	2.5800e-003	9.5000e-004	3.5300e-003	0.0000	22.1754	22.1754	1.6600e-003	0.0000	22.2169
Worker	3.5900e-003	2.9900e-003	0.0319	7.0000e-005	0.0123	6.0000e-005	0.0123	3.1500e-003	5.0000e-005	3.2000e-003	0.0000	6.4973	6.4973	2.5000e-004	0.0000	6.5034
Total	**7.9500e-003**	**0.1197**	**0.0632**	**3.0000e-004**	**0.0218**	**1.0500e-003**	**0.0229**	**5.7300e-003**	**1.0000e-003**	**6.7300e-003**	**0.0000**	**28.6727**	**28.6727**	**1.9100e-003**	**0.0000**	**28.7203**

3.4 Foundations/Parking Structure/Utils - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1280	1.2018	0.9704	1.9400e-003		0.0705	0.0705		0.0678	0.0678	0.0000	172.4361	172.4361	0.0357	0.0000	173.3286
Total	**0.1280**	**1.2018**	**0.9704**	**1.9400e-003**		**0.0705**	**0.0705**		**0.0678**	**0.0678**	**0.0000**	**172.4361**	**172.4361**	**0.0357**	**0.0000**	**173.3286**

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	0.0345	0.9848	0.2537	2.0600e-003	0.0858	7.1000e-003	0.0929	0.0232	6.7900e-003	0.0300	0.0000	198.9528	198.9528	0.0142	0.0000	199.3068
Worker	0.0287	0.0235	0.2520	6.3000e-004	0.1106	4.8000e-004	0.1111	0.0283	4.4000e-004	0.0288	0.0000	56.8352	56.8352	1.9400e-003	0.0000	56.8836
Total	**0.0632**	**1.0082**	**0.5058**	**2.6900e-003**	**0.1964**	**7.5800e-003**	**0.2040**	**0.0516**	**7.2300e-003**	**0.0588**	**0.0000**	**255.7879**	**255.7879**	**0.0161**	**0.0000**	**256.1904**

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	0.1280	1.2018	0.9704	1.9400e-003		0.0705	0.0705		0.0678	0.0678	0.0000	172.4359	172.4359	0.0357	0.0000	173.3284
Total	**0.1280**	**1.2018**	**0.9704**	**1.9400e-003**		**0.0705**	**0.0705**		**0.0678**	**0.0678**	**0.0000**	**172.4359**	**172.4359**	**0.0357**	**0.0000**	**173.3284**

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	0.0345	0.9848	0.2537	2.0600e-003	0.0858	7.1000e-003	0.0929	0.0232	6.7900e-003	0.0300	0.0000	198.9528	198.9528	0.0142	0.0000	199.3068
Worker	0.0287	0.0235	0.2520	6.3000e-004	0.1106	4.8000e-004	0.1111	0.0283	4.4000e-004	0.0288	0.0000	56.8352	56.8352	1.9400e-003	0.0000	56.8836
Total	**0.0632**	**1.0082**	**0.5058**	**2.6900e-003**	**0.1964**	**7.5800e-003**	**0.2040**	**0.0516**	**7.2300e-003**	**0.0588**	**0.0000**	**255.7879**	**255.7879**	**0.0161**	**0.0000**	**256.1904**

3.5 Concrete Pour - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.6000e-003	0.0125	0.0114	2.0000e-005		8.3000e-004	8.3000e-004		8.3000e-004	8.3000e-004	0.0000	1.6956	1.6956	1.3000e-004	0.0000	1.6988
Total	**1.6000e-003**	**0.0125**	**0.0114**	**2.0000e-005**		**8.3000e-004**	**8.3000e-004**		**8.3000e-004**	**8.3000e-004**	**0.0000**	**1.6956**	**1.6956**	**1.3000e-004**	**0.0000**	**1.6988**

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	4.3000e-004	0.0124	3.1900e-003	3.0000e-005	6.3000e-004	9.0000e-005	7.2000e-004	1.8000e-004	9.0000e-005	2.7000e-004	0.0000	2.4978	2.4978	1.8000e-004	0.0000	2.5023
Worker	5.0000e-005	4.0000e-005	4.7000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1053	0.1053	0.0000	0.0000	0.1053

Total	**4.8000e-004**	**0.0124**	**3.6600e-003**	**3.0000e-005**	**7.4000e-004**	**9.0000e-005**	**8.3000e-004**	**2.1000e-004**	**9.0000e-005**	**3.0000e-004**	**0.0000**	**2.6031**	**2.6031**	**1.8000e-004**	**0.0000**	**2.6076**

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	1.6000e-003	0.0125	0.0114	2.0000e-005		8.3000e-004	8.3000e-004		8.3000e-004	8.3000e-004	0.0000	1.6956	1.6956	1.3000e-004	0.0000	1.6988
Total	**1.6000e-003**	**0.0125**	**0.0114**	**2.0000e-005**		**8.3000e-004**	**8.3000e-004**		**8.3000e-004**	**8.3000e-004**	**0.0000**	**1.6956**	**1.6956**	**1.3000e-004**	**0.0000**	**1.6988**

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	4.3000e-004	0.0124	3.1900e-003	3.0000e-005	6.3000e-004	9.0000e-005	7.2000e-004	1.8000e-004	9.0000e-005	2.7000e-004	0.0000	2.4978	2.4978	1.8000e-004	0.0000	2.5023
Worker	5.0000e-005	4.0000e-005	4.7000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1053	0.1053	0.0000	0.0000	0.1053
Total	**4.8000e-004**	**0.0124**	**3.6600e-003**	**3.0000e-005**	**7.4000e-004**	**9.0000e-005**	**8.3000e-004**	**2.1000e-004**	**9.0000e-005**	**3.0000e-004**	**0.0000**	**2.6031**	**2.6031**	**1.8000e-004**	**0.0000**	**2.6076**

3.6 Building (Framing) - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1464	1.1621	0.8335	1.2600e-003		0.0716	0.0716		0.0670	0.0670	0.0000	109.3543	109.3543	0.0312	0.0000	110.1351
Total	**0.1464**	**1.1621**	**0.8335**	**1.2600e-003**		**0.0716**	**0.0716**		**0.0670**	**0.0670**	**0.0000**	**109.3543**	**109.3543**	**0.0312**	**0.0000**	**110.1351**

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	0.0160	0.4559	0.1175	9.5000e-004	0.0232	3.2900e-003	0.0265	6.7100e-003	3.1400e-003	9.8500e-003	0.0000	92.1078	92.1078	6.5600e-003	0.0000	92.2717
Worker	0.0890	0.0728	0.7817	1.9500e-003	0.1838	1.4900e-003	0.1853	0.0488	1.3800e-003	0.0502	0.0000	176.2943	176.2943	6.0200e-003	0.0000	176.4446
Total	**0.1050**	**0.5288**	**0.8992**	**2.9000e-003**	**0.2070**	**4.7800e-003**	**0.2118**	**0.0555**	**4.5200e-003**	**0.0600**	**0.0000**	**268.4020**	**268.4020**	**0.0126**	**0.0000**	**268.7163**

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	0.1464	1.1621	0.8335	1.2600e-003		0.0716	0.0716		0.0670	0.0670	0.0000	109.3542	109.3542	0.0312	0.0000	110.1350
Total	**0.1464**	**1.1621**	**0.8335**	**1.2600e-003**		**0.0716**	**0.0716**		**0.0670**	**0.0670**	**0.0000**	**109.3542**	**109.3542**	**0.0312**	**0.0000**	**110.1350**

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	0.0160	0.4559	0.1175	9.5000e-004	0.0232	3.2900e-003	0.0265	6.7100e-003	3.1400e-003	9.8500e-003	0.0000	92.1078	92.1078	6.5600e-003	0.0000	92.2717
Worker	0.0890	0.0728	0.7817	1.9500e-003	0.1838	1.4900e-003	0.1853	0.0488	1.3800e-003	0.0502	0.0000	176.2943	176.2943	6.0200e-003	0.0000	176.4446
Total	**0.1050**	**0.5288**	**0.8992**	**2.9000e-003**	**0.2070**	**4.7800e-003**	**0.2118**	**0.0555**	**4.5200e-003**	**0.0600**	**0.0000**	**268.4020**	**268.4020**	**0.0126**	**0.0000**	**268.7163**

3.6 Building (Framing) - 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	0.1741	1.4185	1.0902	1.7000e-003		0.0834	0.0834		0.0781	0.0781	0.0000	145.9468	145.9468	0.0414	0.0000	146.9825
Total	**0.1741**	**1.4185**	**1.0902**	**1.7000e-003**		**0.0834**	**0.0834**		**0.0781**	**0.0781**	**0.0000**	**145.9468**	**145.9468**	**0.0414**	**0.0000**	**146.9825**

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	0.0196	0.5813	0.1458	1.2800e-003	0.0314	3.8000e-003	0.0352	9.0700e-003	3.6400e-003	0.0127	0.0000	123.4265	123.4265	8.5400e-003	0.0000	123.6401
Worker	0.1094	0.0869	0.9442	2.5600e-003	0.2485	1.9700e-003	0.2504	0.0660	1.8200e-003	0.0678	0.0000	230.8289	230.8289	7.2100e-003	0.0000	231.0092
Total	**0.1290**	**0.6682**	**1.0900**	**3.8400e-003**	**0.2799**	**5.7700e-003**	**0.2857**	**0.0751**	**5.4600e-003**	**0.0805**	**0.0000**	**354.2554**	**354.2554**	**0.0158**	**0.0000**	**354.6493**

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	0.1741	1.4185	1.0901	1.7000e-003		0.0834	0.0834		0.0781	0.0781	0.0000	145.9466	145.9466	0.0414	0.0000	146.9823
Total	**0.1741**	**1.4185**	**1.0901**	**1.7000e-003**		**0.0834**	**0.0834**		**0.0781**	**0.0781**	**0.0000**	**145.9466**	**145.9466**	**0.0414**	**0.0000**	**146.9823**

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	0.0196	0.5813	0.1458	1.2800e-003	0.0314	3.8000e-003	0.0352	9.0700e-003	3.6400e-003	0.0127	0.0000	123.4265	123.4265	8.5400e-003	0.0000	123.6401
Worker	0.1094	0.0869	0.9442	2.5600e-003	0.2485	1.9700e-003	0.2504	0.0660	1.8200e-003	0.0678	0.0000	230.8289	230.8289	7.2100e-003	0.0000	231.0092
Total	**0.1290**	**0.6682**	**1.0900**	**3.8400e-003**	**0.2799**	**5.7700e-003**	**0.2857**	**0.0751**	**5.4600e-003**	**0.0805**	**0.0000**	**354.2554**	**354.2554**	**0.0158**	**0.0000**	**354.6493**

3.7 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.9321					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0129	0.1017	0.1153	1.8000e-004		6.1200e-003	6.1200e-003		6.0800e-003	6.0800e-003	0.0000	15.9653	15.9653	2.4900e-003	0.0000	16.0274
Total	**0.9450**	**0.1017**	**0.1153**	**1.8000e-004**		**6.1200e-003**	**6.1200e-003**		**6.0800e-003**	**6.0800e-003**	**0.0000**	**15.9653**	**15.9653**	**2.4900e-003**	**0.0000**	**16.0274**

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	8.7900e-003	6.9800e-003	0.0759	2.1000e-004	0.0200	1.6000e-004	0.0201	5.3000e-003	1.5000e-004	5.4500e-003	0.0000	18.5511	18.5511	5.8000e-004	0.0000	18.5656

Total	**8.7900e-003**	**6.9800e-003**	**0.0759**	**2.1000e-004**	**0.0200**	**1.6000e-004**	**0.0201**	**5.3000e-003**	**1.5000e-004**	**5.4500e-003**	**0.0000**	**18.5511**	**18.5511**	**5.8000e-004**	**0.0000**	**18.5656**

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	0.9321					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0129	0.1017	0.1153	1.8000e-004		6.1200e-003	6.1200e-003		6.0800e-003	6.0800e-003	0.0000	15.9652	15.9652	2.4900e-003	0.0000	16.0274
Total	**0.9450**	**0.1017**	**0.1153**	**1.8000e-004**		**6.1200e-003**	**6.1200e-003**		**6.0800e-003**	**6.0800e-003**	**0.0000**	**15.9652**	**15.9652**	**2.4900e-003**	**0.0000**	**16.0274**

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	8.7900e-003	6.9800e-003	0.0759	2.1000e-004	0.0200	1.6000e-004	0.0201	5.3000e-003	1.5000e-004	5.4500e-003	0.0000	18.5511	18.5511	5.8000e-004	0.0000	18.5656
Total	**8.7900e-003**	**6.9800e-003**	**0.0759**	**2.1000e-004**	**0.0200**	**1.6000e-004**	**0.0201**	**5.3000e-003**	**1.5000e-004**	**5.4500e-003**	**0.0000**	**18.5511**	**18.5511**	**5.8000e-004**	**0.0000**	**18.5656**

3.8 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.2700e-003	0.0540	0.0532	8.0000e-005		3.1100e-003	3.1100e-003		2.8600e-003	2.8600e-003	0.0000	7.2176	7.2176	2.2800e-003	0.0000	7.2747
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.2700e-003**	**0.0540**	**0.0532**	**8.0000e-005**		**3.1100e-003**	**3.1100e-003**		**2.8600e-003**	**2.8600e-003**	**0.0000**	**7.2176**	**7.2176**	**2.2800e-003**	**0.0000**	**7.2747**

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	9.3000e-004	7.4000e-004	8.0100e-003	2.0000e-005	3.9300e-003	2.0000e-005	3.9500e-003	1.0100e-003	2.0000e-005	1.0200e-003	0.0000	1.9570	1.9570	6.0000e-005	0.0000	1.9586
Total	**9.3000e-004**	**7.4000e-004**	**8.0100e-003**	**2.0000e-005**	**3.9300e-003**	**2.0000e-005**	**3.9500e-003**	**1.0100e-003**	**2.0000e-005**	**1.0200e-003**	**0.0000**	**1.9570**	**1.9570**	**6.0000e-005**	**0.0000**	**1.9586**

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	5.2700e-003	0.0540	0.0532	8.0000e-005		3.1100e-003	3.1100e-003		2.8600e-003	2.8600e-003	0.0000	7.2176	7.2176	2.2800e-003	0.0000	7.2747
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.2700e-003**	**0.0540**	**0.0532**	**8.0000e-005**		**3.1100e-003**	**3.1100e-003**		**2.8600e-003**	**2.8600e-003**	**0.0000**	**7.2176**	**7.2176**	**2.2800e-003**	**0.0000**	**7.2747**

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	9.3000e-004	7.4000e-004	8.0100e-003	2.0000e-005	3.9300e-003	2.0000e-005	3.9500e-003	1.0100e-003	2.0000e-005	1.0200e-003	0.0000	1.9570	1.9570	6.0000e-005	0.0000	1.9586
Total	**9.3000e-004**	**7.4000e-004**	**8.0100e-003**	**2.0000e-005**	**3.9300e-003**	**2.0000e-005**	**3.9500e-003**	**1.0100e-003**	**2.0000e-005**	**1.0200e-003**	**0.0000**	**1.9570**	**1.9570**	**6.0000e-005**	**0.0000**	**1.9586**

A.2 Operational Emissions

- CalEEMod Operational Emissions Output (Annual)
- GHG Summary

The Madison-Operational

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	445.00	Space	4.00	178,000.00	0
Apartments Mid Rise	260.00	Dwelling Unit	6.84	260,000.00	744
Regional Shopping Center	2.51	1000sqft	0.06	2,510.00	0
Regional Shopping Center	6.96	1000sqft	0.16	6,957.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	541.42	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Project Specific-2019 CO2 IF

Land Use - Project Specific

Vehicle Trips - Project Trip Generation and Land Use VMT Reductions

Woodstoves - Residential units would not have fireplaces

Area Coating -

Energy Use - Updated with Title 24 2016 energy rates

Construction Off-road Equipment Mitigation -

Area Mitigation -

Energy Mitigation - Use Energy STAR appliances

Water Mitigation -

Waste Mitigation -

Construction Phase -

Table Name	Column Name	Default Value	New Value
tblApplianceMitigation	PercentImprovement	30.00	0.00
tblApplianceMitigation	PercentImprovement	50.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	4,734.00	4,535.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	14,201.00	13,605.00
tblArchitecturalCoating	ConstArea_Parking	10,680.00	11,472.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	175,500.00	189,000.00
tblArchitecturalCoating	ConstArea_Residential_Interior	526,500.00	567,000.00
tblArchitecturalCoating	EF_Parking	100.00	0.00
tblAreaCoating	Area_Nonresidential_Exterior	4734	4535
tblAreaCoating	Area_Nonresidential_Interior	14201	13605
tblAreaCoating	Area_Parking	10680	11472
tblAreaCoating	Area_Residential_Exterior	175500	189000
tblAreaCoating	Area_Residential_Interior	526500	567000
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblEnergyUse	LightingElect	741.44	533.84
tblEnergyUse	LightingElect	2.63	2.50
tblEnergyUse	LightingElect	5.85	5.56
tblEnergyUse	T24E	211.98	152.63
tblEnergyUse	T24E	3.92	3.72
tblEnergyUse	T24E	3.07	2.92
tblEnergyUse	T24NG	8,530.25	6,141.78
tblEnergyUse	T24NG	0.96	0.91
tblFireplaces	NumberGas	221.00	0.00
tblFireplaces	NumberNoFireplace	26.00	28.00
tblFireplaces	NumberPropane	0.00	6.00

tblFireplaces	NumberWood	13.00	0.00
tblLandUse	BuildingSpaceSquareFeet	6,960.00	6,957.00
tblLandUse	LandUseSquareFeet	6,960.00	6,957.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	541.42
tblProjectCharacteristics	OperationalYear	2018	2019
tblSolidWaste	SolidWasteGenerationRate	119.60	128.80
tblSolidWaste	SolidWasteGenerationRate	9.94	9.52
tblTripsAndVMT	VendorTripNumber	59.00	63.00
tblTripsAndVMT	WorkerTripNumber	265.00	285.00
tblTripsAndVMT	WorkerTripNumber	53.00	57.00
tblVehicleTrips	CC_TL	8.40	5.33
tblVehicleTrips	CNW_TL	6.90	4.37
tblVehicleTrips	CW_TL	16.60	10.52
tblVehicleTrips	HO_TL	8.70	5.52
tblVehicleTrips	HS_TL	5.90	3.74
tblVehicleTrips	HW_TL	14.70	9.32
tblVehicleTrips	ST_TR	6.39	6.32
tblVehicleTrips	ST_TR	49.97	40.56
tblVehicleTrips	SU_TR	5.86	6.32
tblVehicleTrips	SU_TR	25.24	40.56
tblVehicleTrips	WD_TR	6.65	6.32
tblVehicleTrips	WD_TR	42.70	40.56
tblWater	IndoorWaterUseRate	16,940,046.66	18,243,127.17
tblWater	IndoorWaterUseRate	701,466.78	671,837.77
tblWater	OutdoorWaterUseRate	10,679,594.63	11,501,101.91
tblWater	OutdoorWaterUseRate	429,931.25	411,771.54
tblWoodstoves	NumberCatalytic	13.00	0.00
tblWoodstoves	NumberNoncatalytic	13.00	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	1.1629	0.0332	2.7015	1.4000e-004		0.0149	0.0149		0.0149	0.0149	0.0000	6.0642	6.0642	4.3600e-003	1.2000e-004	6.2090
Energy	0.0164	0.1406	0.0602	9.0000e-004		0.0114	0.0114		0.0114	0.0114	0.0000	722.2475	722.2475	0.0331	9.1800e-003	725.8116
Mobile	0.7279	3.6376	7.9681	0.0235	1.5835	0.0276	1.6111	0.4282	0.0260	0.4542	0.0000	2,170.5498	2,170.5498	0.1286	0.0000	2,173.7637
Waste						0.0000	0.0000		0.0000	0.0000	28.0777	0.0000	28.0777	1.6594	0.0000	69.5613
Water						0.0000	0.0000		0.0000	0.0000	6.0009	92.9889	98.9897	0.6213	0.0156	119.1668
Total	**1.9072**	**3.8114**	**10.7298**	**0.0246**	**1.5835**	**0.0538**	**1.6373**	**0.4282**	**0.0522**	**0.4804**	**34.0786**	**2,991.8504**	**3,025.9289**	**2.4467**	**0.0249**	**3,094.5124**

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	1.1629	0.0325	2.7010	1.5000e-004		0.0149	0.0149		0.0149	0.0149	0.0000	5.8319	5.8319	4.3600e-003	3.0000e-005	5.9488
Energy	0.0164	0.1406	0.0602	9.0000e-004		0.0114	0.0114		0.0114	0.0114	0.0000	715.6485	715.6485	0.0327	9.1100e-003	719.1819
Mobile	0.7279	3.6376	7.9681	0.0235	1.5835	0.0276	1.6111	0.4282	0.0260	0.4542	0.0000	2,170.5498	2,170.5498	0.1286	0.0000	2,173.7637
Waste						0.0000	0.0000		0.0000	0.0000	9.2656	0.0000	9.2656	0.5476	0.0000	22.9552
Water						0.0000	0.0000		0.0000	0.0000	4.8007	78.9091	83.7098	0.4973	0.0125	99.8724
Total	**1.9072**	**3.8107**	**10.7292**	**0.0246**	**1.5835**	**0.0538**	**1.6373**	**0.4282**	**0.0522**	**0.4804**	**14.0663**	**2,970.9392**	**2,985.0055**	**1.2105**	**0.0217**	**3,021.7219**

	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**	**0.02**	**0.01**	**-0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**58.72**	**0.70**	**1.35**	**50.52**	**12.94**	**2.35**

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	0.7279	3.6376	7.9681	0.0235	1.5835	0.0276	1.6111	0.4282	0.0260	0.4542	0.0000	2,170.5498	2,170.5498	0.1286	0.0000	2,173.7637
Unmitigated	0.7279	3.6376	7.9681	0.0235	1.5835	0.0276	1.6111	0.4282	0.0260	0.4542	0.0000	2,170.5498	2,170.5498	0.1286	0.0000	2,173.7637

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,643.20	1,643.20	1643.20	3,561,494	3,561,494
Enclosed Parking with Elevator	0.00	0.00	0.00		
Regional Shopping Center	101.81	101.81	101.81	139,779	139,779
Regional Shopping Center	282.30	282.30	282.30	387,593	387,593
Total	2,027.30	2,027.30	2,027.30	4,088,866	4,088,866

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	9.32	3.74	5.52	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
Regional Shopping Center	10.52	5.33	4.37	16.30	64.70	19.00	54	35	11
Regional Shopping Center	10.52	5.33	4.37	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Enclosed Parking with Elevator	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991
Apartments Mid Rise	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991
Regional Shopping Center	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991
Regional Shopping Center	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	552.9114	552.9114	0.0296	6.1300e-003	555.4777
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	559.5104	559.5104	0.0300	6.2000e-003	562.1074
NaturalGas Mitigated	0.0164	0.1406	0.0602	9.0000e-004		0.0114	0.0114		0.0114	0.0114	0.0000	162.7371	162.7371	3.1200e-003	2.9800e-003	163.7042
NaturalGas Unmitigated	0.0164	0.1406	0.0602	9.0000e-004		0.0114	0.0114		0.0114	0.0114	0.0000	162.7371	162.7371	3.1200e-003	2.9800e-003	163.7042

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.03102e+006	0.0163	0.1397	0.0594	8.9000e-004		0.0113	0.0113		0.0113	0.0113	0.0000	161.7469	161.7469	3.1000e-003	2.9700e-003	162.7081
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
Regional Shopping Center	13635.7	7.0000e-005	6.7000e-004	5.6000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.7277	0.7277	1.0000e-005	1.0000e-005	0.7320
Regional Shopping Center	4919.6	3.0000e-005	2.4000e-004	2.0000e-004	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.2625	0.2625	1.0000e-005	0.0000	0.2641
Total		**0.0164**	**0.1406**	**0.0602**	**8.9000e-004**		**0.0114**	**0.0114**		**0.0114**	**0.0114**	**0.0000**	**162.7371**	**162.7371**	**3.1200e-003**	**2.9800e-003**	**163.7042**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.03102e+006	0.0163	0.1397	0.0594	8.9000e-004		0.0113	0.0113		0.0113	0.0113	0.0000	161.7469	161.7469	3.1000e-003	2.9700e-003	162.7081
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
Regional Shopping Center	13635.7	7.0000e-005	6.7000e-004	5.6000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.7277	0.7277	1.0000e-005	1.0000e-005	0.7320
Regional Shopping Center	4919.6	3.0000e-005	2.4000e-004	2.0000e-004	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.2625	0.2625	1.0000e-005	0.0000	0.2641
Total		**0.0164**	**0.1406**	**0.0602**	**8.9000e-004**		**0.0114**	**0.0114**		**0.0114**	**0.0114**	**0.0000**	**162.7371**	**162.7371**	**3.1200e-003**	**2.9800e-003**	**163.7042**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.03052e+006	253.0787	0.0136	2.8000e-003	254.2533
Enclosed Parking with Elevator	1.14098e+006	280.2064	0.0150	3.1100e-003	281.5070
Regional Shopping Center	28312.8	6.9532	3.7000e-004	8.0000e-005	6.9854
Regional Shopping Center	78475	19.2722	1.0300e-003	2.1000e-004	19.3616
Total		**559.5104**	**0.0300**	**6.2000e-003**	**562.1074**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.00365e+006	246.4796	0.0132	2.7300e-003	247.6236
Enclosed Parking with Elevator	1.14098e+006	280.2064	0.0150	3.1100e-003	281.5070
Regional Shopping Center	28312.8	6.9532	3.7000e-004	8.0000e-005	6.9854
Regional Shopping Center	78475	19.2722	1.0300e-003	2.1000e-004	19.3616
Total		**552.9114**	**0.0296**	**6.1300e-003**	**555.4777**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	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	1.1629	0.0325	2.7010	1.5000e-004		0.0149	0.0149		0.0149	0.0149	0.0000	5.8319	5.8319	4.3600e-003	3.0000e-005	5.9488
Unmitigated	1.1629	0.0332	2.7015	1.4000e-004		0.0149	0.0149		0.0149	0.0149	0.0000	6.0642	6.0642	4.3600e-003	1.2000e-004	6.2090

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	0.0945					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9852					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.5000e-004	1.9200e-003	1.1100e-003	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004	0.0000	1.6731	1.6731	3.0000e-005	1.2000e-004	1.7097
Landscaping	0.0830	0.0313	2.7004	1.4000e-004		0.0148	0.0148		0.0148	0.0148	0.0000	4.3911	4.3911	4.3300e-003	0.0000	4.4994
Total	**1.1629**	**0.0332**	**2.7015**	**1.4000e-004**		**0.0149**	**0.0149**		**0.0149**	**0.0149**	**0.0000**	**6.0642**	**6.0642**	**4.3600e-003**	**1.2000e-004**	**6.2090**

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	0.0945					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9852					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.5000e-004	1.2400e-003	5.3000e-004	1.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004	0.0000	1.4408	1.4408	3.0000e-005	3.0000e-005	1.4494
Landscaping	0.0830	0.0313	2.7004	1.4000e-004		0.0148	0.0148		0.0148	0.0148	0.0000	4.3911	4.3911	4.3300e-003	0.0000	4.4994
Total	**1.1629**	**0.0325**	**2.7010**	**1.5000e-004**		**0.0149**	**0.0149**		**0.0149**	**0.0149**	**0.0000**	**5.8319**	**5.8319**	**4.3600e-003**	**3.0000e-005**	**5.9487**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Turf Reduction

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	83.7098	0.4973	0.0125	99.8724
Unmitigated	98.9897	0.6213	0.0156	119.1668

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	18.2431 / 11.5011	95.5047	0.5993	0.0150	114.9652
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.671838 / 0.411772	3.4850	0.0221	5.5000e-004	4.2015
Total		**98.9897**	**0.6213**	**0.0156**	**119.1668**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	14.5945 / 10.7995	80.7656	0.4796	0.0121	96.3543
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.53747 / 0.386653	2.9442	0.0177	4.4000e-004	3.5181
Total		**83.7098**	**0.4973**	**0.0125**	**99.8724**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	9.2656	0.5476	0.0000	22.9552
Unmitigated	28.0777	1.6594	0.0000	69.5613

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	128.8	26.1452	1.5451	0.0000	64.7737
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	9.52	1.9325	0.1142	0.0000	4.7876
Total		**28.0777**	**1.6594**	**0.0000**	**69.5613**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	42.504	8.6279	0.5099	0.0000	21.3753
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	3.1416	0.6377	0.0377	0.0000	1.5799
Total		**9.2657**	**0.5476**	**0.0000**	**22.9553**

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

The Madison Mixed-Use Project
Draft Environmental Impact Report
Quantifying Greenhouse Gas Mitigation Measures - Transportation (Based on CAPCOA Guidance (August 2010))

EXISTING USES

Location Type	Global % VMT Reduction Cap
Urban:	75%
Less than 5 miles from central business district	
Jobs-rich (jobs/housing ratio greater than 1.5)	
Typical buildings are 6 stories or higher	
Grid street pattern	
Minimal setbacks	
Parking constrained on- and off-street	
Parking prices high/highest in the region	
High-quality rail; bus service at 10 min or less in peak hours	
Compact Infill:	40%
Typically 5 - 15 miles from central business district	
Balanced jobs-housing (jobs/housing ratio from 0.9 to 1.2)	
Typical buildings are 2 - 4 stories	
Grid street pattern	
Setbacks 0 - 20 feet	
Parking constrained	
Parking prices low/moderate	
Rail w/in 2 miles; bus service at 15 min or less in peak hours	

Location Type	Global % VMT Reduction Cap
Suburban Center:	20%
Typically 20 miles or more from central business district	
Balanced jobs-housing	
Typical buildings are 2 stories	
Grid street pattern	
Setbacks 0 - 20 feet	
Parking somewhat constrained on-street; ample off-street	
Parking prices low (if priced at all)	
Bus service at 20 - 30 min and/or commuter rail station	
Suburban:	15%
Typically 20 miles or more from central business district	
Housing-rich	
Typical buildings are 1 - 2 stories	
Curvilinear street pattern (cul-de-sac based)	
Parking between street and buildings; large lot residential	
Parking ample; largely surface lot-based	
No parking prices	
Limited bus service at 30 minute headways or more	

Total Global Transportation VMT Reduction = **36.60%** Cap: 75%
(Includes double counting correction.)

Total LUT/SDT/PDT/TST VMT Reduction = **36.60%** Cap: 70%

Land Use/Location Transportation Measures (65% Reduction Cap)

Total LUT % VMT Reduction = **36.60%** Cap: 65%

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 = 19.50% Cap: 20%

Miles to downtown or job center: 0.30

Located in near many businesses, land uses that surround Project are designated Professional or commercial

(Note: Only effective for 8 miles or less)

LUT-5 Increase Transit Accessibility

% 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 = 21.24% Cap: 30%

Miles to transit: 0.10

(Note: Only effective for 3 miles or less)

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Energy

	Unmitigated	Mitigated	Additional Reductions	Total
Electricity		**MT CO2e/year**		
Apartment Mid Rise	254	248		248
Enclosed Parking with elevator	282	282	141	141
Regional Shopping Center	7	7		7
Regional Shopping Center	19	19		19
Total	**562**	**555**		**415**

Natural Gas	Unmitigated	Mitigated	Total
		MT CO2e/year	
Apartment Mid Rise	163	163	163
Enclosed Parking with elevator	0	0	0
Regional Shopping Center	1	1	1
Regional Shopping Center	0	0	0
Total	**164**	**164**	**164**

The Madison Mixed-Use Project
Draft Environmental Impact Report

Project Trip Generation Rates and Forecast

	Daily Rate	With 5% Rediction
Apartments (Trip Ends/DU)	6.65	6.3175
Retail (Trip Ends/ KSF)	42.7	40.565

Without 5% Interal Capture	Amount	Trip Rate [1]	Trips per day
Madison Apartment (DU)	260	6.65	1729
Retail component of live/work units (KSF)	2.507	42.7	107
Retail (KSF) [3]	6.957	42.7	297
		Total	2133
With 5% Internal Capture [2]	Amount	Trip Rate [1]	Trips per day
Madison Apartment (DU)	260	6.3175	1643
Retail component of live/work units (KSF)	2.507	40.565	102
Retail (KSF)	6.957	40.565	282
		Total	2026

Notes:

1 Trip Generation, 9th Edition, Institute of Transportation Engineers (ITE)

2 Traffic Impact Analysis for the Madison Mixed-Use Project, Linscott, Law, and Greenspan Engineers.

3 Retail square footage estimated from:
V:\ACTIVE PROJECTS\Madison Freeway HRA\Project Info\2017-0728_Madison_ProjectStatistics.pdf

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VMT Adjustments for Land Uses
CalEEMod Defaults

The Madison	Res H-W	Res H-S	Res H-O
Apartments	14.7	5.9	8.7
Retail	Non-Res C-C	Non-Res C-W	Non-Res C-NW
	8.4	16.6	6.9
Adjusted VMT			
	36.60%	VMT Reduction	
The Madison	Res H-W	Res H-S	Res H-O
Apartments	9.32	3.74	5.52
	Non-Res C-C	Non-Res C-W	Non-Res C-NW
Retail	5.33	10.52	4.37

The Madison Mixed-Use Project
Draft Environmental Impact Report
GHG Summary

The Madison Mixed-Use Project	CO2e MT/yr
Area	6
Electricity	415
Natural Gas	164
Mobile	2174
Waste	23
Water	100
Subtotal	2881
Construction	50
Total Project Emssions	**2931**
Threshold	**3000**
Above Threshold?	No
Above/ (Under)	(69)