CITY OF PLEASANTON JOHNSON DRIVE ECONOMIC DEVELOPMENT ZONE

Final Greenhouse Gas Technical Analysis

Prepared for
City of Pleasanton

July 2019

ESA

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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.

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List of Acronyms and Abbreviations

AB	Assembly Bill
ABAG	Association of Bay Area Governments
AEP	Association of Environmental Professionals
BAAQMD	Bay Area Air Quality Management District
BAU	Business as Usual
CAA	Clean Air Act
CalEEMod	California Emissions Estimator Model
CALGreen	California Green Building Standards
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CEUS	California Commercial End Use Survey
CFCs	Chlorofluorocarbon
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalents
CH_4	Methane
CNRA	California Natural Resources Agency
DPM	Diesel Particulate Matter
CAP	Climate Action Plan
CEC	California Energy Commission
EDZ	Economic Development Zone
EPA	U.S. Environmental Protection Agency
EIR	Environmental Impact Report
EV	electric-vehicle
EVSE	electric vehicle supply equipment
FY	Fiscal year
GHG	Greenhouse gas emission
GWP	Global warming potential
HCFCs	Hydrochlorofluorocarbons
HDDV	Heavy duty diesel vehicle
HHD	heavy-heavy-duty
HFCs	Hydrofluorocarbons
HRA	health risk assessment
HVAC-R	Heating, ventilation, air conditioning and refrigeration
IBC	International Building Code
KW	kilowatt
kWh	kilowatt-hour
Lbs	pounds
LCFS	Low Carbon Fuel Standards
LEED	Leadership in Energy and Environmental Design
Mpg	Miles per gallon
MPO	metropolitan planning organization
MTC	Metropolitan Transportation Commission

MT	Metric ton
MMT	Million metric tons
MWh	megawatt-hour
N_2O	Nitrous oxide
NHTSA	National Highway Traffic Safety Administration
OPR	Governor's Office of Planning and Research
PDA	Priority Development Area
PG&E	Pacific Gas and Electric
PFCs	Perfluorocarbons
POUs	publicly owned utilities
PV	photovoltaic
RPS	Renewables Portfolio Standard
SB	Senate Bill
SF_6	Sulfur hexafluoride
TAC	Toxic Air Contaminant
TCMs	Transportation Control Measures
TDM	Transportation Demand Management
TPA	Transit Priority Area
TRU	transportation refrigeration unit
U.S.	United States
USGBC	U.S. Green Building Council
VMT	Vehicle miles traveled
WRRP	Waste Reduction and Recycling Plan

Chapter 1
Introduction and Background

Environmental Science Associates (ESA) has prepared this Greenhouse Gas (GHG) Technical Analysis in support of environmental clearance under the California Environmental Quality Act (CEQA) for the Johnson Drive Economic Development Zone (EDZ) project (Project) located in the City of Pleasanton (City).

The EDZ would result in the establishment of an economic development zone along Johnson Drive in the City of Pleasanton, presently identified in the City's General Plan as an area within the Commerce Circle/Johnson Drive Sub-Area, the approval of an associated General Plan amendment, and the rezoning of 12 parcels within the area to a commercial Planned Unit Development zone, for the purpose of facilitating the development of uses that would add value to the properties, and promote long-term economic sustainability for the City as a whole.

1.1 Existing Conditions

The EDZ area comprises approximately 40 acres, located southeast of the intersection of I-680 and I-580, a major regional transportation node. Currently there is 224,688 square feet of occupied building space at the site, containing a mix of light industrial, office, retail, and institutional land uses.

1.2 Project Description

The Project site would be developed with approximately 148,000 square feet (sf) of club retail (Costco store) with a 20-pump (dispensers) gas station on parcel 6. Parking for up to 800 vehicles and landscaping and site improvements, including bio-retention areas to manage on-site stormwater runoff and trees planted throughout the parcel to provide shading and visual screening around the perimeter, could also be developed on this parcel. A 231-room hotel consisting of approximately 132,000 sf and 5,000 sf of retail would be developed on parcels 9 and 10, and the remaining parcels would be developed with approximately 184,000 sf of retail space.

1.3 Environmental Setting

Greenhouse Gases and 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, current data increasingly indicate that the current global conditions differ from past climate changes in rate and magnitude. Global climate change attributable to anthropogenic (human) GHG emissions is currently one of the most important and widely debated scientific, economic and political issues in the United States and the world. The extent to which increased concentrations of GHGs have caused or will cause climate change and the appropriate actions to limit and/or respond to climate change are the subject of significant and rapidly evolving regulatory efforts at the federal and state levels of government.

GHGs are compounds in the Earth's atmosphere which play a critical role in determining temperature near the Earth's surface. More specifically, these gases allow high-frequency shortwave solar radiation to enter the Earth's atmosphere, but retain some of the low frequency infrared energy which is radiated back from the Earth towards space, resulting in a warming of the atmosphere. Not all GHGs possess the same ability to induce climate change; as a result, GHG contributions are commonly quantified in the units of equivalent mass of carbon dioxide (CO_2e). Mass emissions are calculated by converting pollutant specific emissions to CO_2e emissions by applying the proper global warming potential (GWP) value.[1] GWP is the measure of the amount of energy one ton of a gas will absorb over a given period of time, relative to the emissions of one ton of carbon dioxide (CO_2). The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that time period. These GWP ratios are provided by the Intergovernmental Panel on Climate Change (IPCC) in its Fourth Assessment Report (AR4).[2] By applying the GWP ratios, project-related CO_2e emissions can be tabulated in metric tons per year. Typically, the GWP ratio corresponding to the warming potential of CO_2 over a 100-year period is used as a reference point for GHG emissions. The CO_2e values are calculated for construction years as well as existing and project build-out conditions in order to generate a net change in GHG emissions for construction and operation. Compounds that are regulated as GHGs are discussed below.

- **Carbon Dioxide (CO_2):** CO_2 is the most abundant anthropogenic GHG in the atmosphere and is primarily generated from fossil fuel combustion from stationary and mobile sources. CO_2 is the reference gas (GWP of 1) for determining the GWPs of other GHGs.
- **Methane (CH_4):** CH_4 is emitted from biogenic sources (i.e., resulting from the activity of living organisms), incomplete combustion in forest fires, anaerobic decomposition of organic matter in landfills, manure management, and leaks in natural gas pipelines. The GWP of CH_4 is 21 in the IPCC SAR and 25 in the IPCC AR4.

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

[2] Intergovernmental Panel on Climate Change (IPCC), 2007. Fourth Assessment Report, The Physical Science Basis, Table 2.14. Available at https://www.ipcc.ch/report/ar4/wg1/. Accessed March 2019.

- **Nitrous Oxide (N_2O):** N_2O produced by human-related sources including agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. The GWP of N_2O is 310 in the IPCC SAR and 298 in the IPCC AR4.
- **Hydrofluorocarbons (HFCs):** HFCs are fluorinated compounds consisting of hydrogen, carbon, and fluorine. They are typically used as refrigerants in both stationary refrigeration and mobile air conditioning systems. The GWPs of HFCs range from 140 for HFC-152a to 11,700 for HFC-23 in the IPCC SAR and 124 for HFC-152a to 14,800 for HFC-23 in the IPCC AR4.
- **Perfluorocarbons (PFCs):** PFCs are fluorinated compounds consisting of carbon and fluorine. They are primarily created as a byproduct of aluminum production and semiconductor manufacturing. The GWPs of PFCs range from 6,500 to 9,200 in the IPCC SAR and 7,390 to 17,700 in the IPCC AR4.
- **Sulfur Hexafluoride (SF_6):** SF_6 is a fluorinated compound consisting of sulfur and fluoride. It is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. SF_6 has a GWP of 23,900 in the IPCC SAR and 22,800 in the IPCC AR4.

Existing Conditions

State of California Greenhouse Gas Emissions Inventory

The California Air Resources Board (CARB) compiles GHG inventories for the State of California. Based on the 2016 GHG inventory data (i.e., the latest year for which data are available from CARB) prepared by CARB in 2018, California emitted 429.4 million metric tons of CO_2e ($MMTCO_2e$) including emissions resulting from imported electrical power.[3] Between 1990 and 2016, the population of California grew by approximately 9.4 million (from 29.8 to 39.2 million).[4] This represents an increase of approximately 32 percent from 1990 population levels. In addition, the California economy, measured as gross state product, grew from $773 billion in 1990 to $2.62 trillion in 2016 representing an increase of approximately 239 percent (just over three times the 1990 gross state product).[5] Despite the population and economic growth, CARB's 2016 Statewide inventory indicated that California's net GHG emissions in 2016 were just below 1990 levels, which is 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). **Table 1**, *State of California GHG Emissions,* identifies and quantifies statewide anthropogenic GHG emissions and sinks (e.g., carbon sequestration due to forest growth) in 1990 and 2016. As shown in the table, the transportation sector is the largest contributor to statewide GHG emissions at approximately 39 percent in 2016.

[3] California Air Resources Board, 2018. California Greenhouse Gas 2000-2016 Inventory by Scoping Plan Category – Summary. Available at https://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_sum_2000-16.pdf. Accessed: March 10, 2019.

[4] California Department of Finance, 2019. E-5 Population and Housing Estimates for Cities, Counties and the State. Available at: http://www.dof.ca.gov/Forecasting/Demographics/Estimates/. Accessed February 8, 2019.

[5] California Department of Finance, 2018. Gross State Product. Available at: http://www.dof.ca.gov/Forecasting/Economics/Indicators/Gross_State_Product/. Accessed February 8, 2019. Amounts are based on current dollars as of the date of the report.

TABLE 1
STATE OF CALIFORNIA GREENHOUSE GAS EMISSIONS

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

[a] Included in other categories for the 1990 emissions inventory.
[b] High GWP gases are not specifically called out in the 1990 emissions inventory.
[c] Revised methodology under development (not reported for 2012).
[d] CARB revised the State's 1990 level GHG emissions using GWPs from the IPCC AR4.

Sources:
CARB, 2017. 1990 to 2004 Inventory Data and Documentation. Available: https://www.arb.ca.gov/cc/inventory/1990level/1990data.htm. Accessed: March 11, 2019;
CARB, 2018. California Greenhouse Gas 2000-2016 Inventory by Scoping Plan Category – Summary. Available: https://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_sum_2000-16.pdf. Accessed: March 10, 2019.

Effects of Global Climate Change

The scientific community's understanding of the fundamental processes responsible for global climate change has improved over the past decade, and its predictive capabilities are advancing. However, there remain significant scientific uncertainties in, for example, predictions of local effects of climate change, occurrence, frequency, and magnitude of extreme weather events, effects of aerosols, changes in clouds, shifts in the intensity and distribution of precipitation, and changes in oceanic circulation. Due to the complexity of the Earth's climate system and inability to accurately model it, the uncertainty surrounding climate change may never be completely eliminated. Nonetheless, the IPCC's *Fifth Assessment Report (AR5)* states that is *extremely likely* that the dominant cause of the observed warming since the mid-20th century is the anthropogenic increase in greenhouse gas concentrations.[6] A report from the National Academy of Sciences concluded that 97 to 98 percent of the climate researchers most actively publishing in the field

6 Intergovernmental Panel on Climate Change, 2014. Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Available at www.ipcc.ch/report/ar5/syrhttps:/. Accessed March 10, 2019.

support the tenets of the IPCC in that climate change is very likely caused by human (i.e., anthropogenic) activity.[7]

The Fourth California Climate Change Assessment (Fourth Assessment), published in 2018, finds that the potential impacts in California due to global climate change include: loss in snow pack; sea level rise; more extreme heat days per year; more high ozone days; more extreme forest fires; more severe droughts punctuated by extreme precipitation events; increased erosion of California's coastlines and sea water intrusion into the Sacramento and San Joaquin Deltas and associated levee systems; and increased pest infestation (OPR et al, 2018).[8] The Fourth Assessment's findings are consistent with climate change studies published by the California Natural Resources Agency (CNRA) since 2009, starting with the California Climate Adaptation Strategy[9] as a response to the Governor's Executive Order S-13-2008. In 2014, the CNRA rebranded the first update of the 2009 adaptation strategy as the Safeguarding California Plan.[10] The 2018 update to Safeguarding California identifies hundreds of ongoing actions and next steps state agencies are taking to safeguard Californians from climate impacts within a framework of 81 policy principles and recommendations.[11] In 2016, the CNRA released Safeguarding California: Implementation Action Plans in accordance with Executive Order B-30-15, identifying a lead agency to lead adaptation efforts in each sector. In accordance with the 2009 California Climate Adaptation Strategy, the CEC was directed to develop a website on climate change scenarios and impacts that would be beneficial for local decision makers. The website, known as Cal-Adapt, became operational in 2011.[12] The information provided on the Cal-Adapt website represents a projection of potential future climate scenarios comprised of local average values for temperature, sea level rise, snowpack and other data representative of a variety of models and scenarios, including potential social and economic factors. According to the Cal-Adapt website, the portion of the state in which the Project site is located could result in an average increase in temperature of approximately 4.2° to 6.9°F by 2070-2090, compared to the baseline 1961-1990 period. Below is a summary of some of the potential effects that could be experienced in California as a result of global warming and climate change.

Air Quality

Higher temperatures, conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore, its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would exacerbate

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

8 California Governor's Office of Planning and Research (OPR), Scripps Institution of Oceanography, CEC, California Public Utilities Commission. 2018. *Statewide Summary Report. California's Fourth Climate Change Assessment*. Publication number: SUMCCCA4-2018-013. Available at : http://www.climateassessment.ca.gov/state/docs/20190116-StatewideSummary.pdf. Accessed: March 11, 2019.

9 California Natural Resources Agency (CNRA), 2009. *2009 California Climate Adaptation Strategy*. Available: http://resources.ca.gov/climate/safeguarding. Accessed: March 10, 2019.

10 CNRA, 2014. *Safeguarding California: Reducing Climate Risk, an Update to the 2009 California Climate Adaptation Strategy*. Available: http://resources.ca.gov/climate/safeguarding/. Accessed: March 10, 2019.

11 CNRA, 2018. *Safeguarding California Plan: 2018 Update*. Available: http://resources.ca.gov/climate/safeguarding/. Accessed: March 10, 2019.

12 The Cal-Adapt website address is: http://cal-adapt.org. Accessed March 10, 2019.

air quality. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state.[13] However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thus ameliorating the pollution associated with wildfires.

Water Supply

There is a high degree of uncertainty with respect to the overall impact of global climate change on future water supplies in California. Studies indicate considerable variability in predicting precise impacts of climate change on California hydrology and water resources. Increasing uncertainty in the timing and intensity of precipitation will challenge the operational flexibility of California's water management systems. Warmer, wetter winters would increase the amount of runoff available for groundwater recharge; however, this additional runoff would occur at a time when some basins are either being recharged at their maximum capacity or are already full. Conversely, reductions in spring runoff and higher evapotranspiration because of higher temperatures could reduce the amount of water available for recharge.[14]

Hydrology and Sea Level Rise

As discussed above, climate changes could potentially affect: the amount of snowfall, rainfall and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. Sea level rise can be a product of global warming through two main processes: expansion of seawater as the oceans warm, and melting of ice over land. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.[15]

Agriculture

California has a massive agricultural industry that represents 11.3 percent of total U.S. agricultural revenue. Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, a changing climate presents significant risks to agriculture due to "potential changes to water quality and availability; changing precipitations patterns; extreme weather events including drought, severe storms, and floods; heat stress; decreased chill hours; shifts in pollinator lifecycles; increased risks from weeds, pest and disease; and disruptions to the transportation and energy infrastructure supporting agricultural production."[16]

13 California Environmental Protection Agency, 2013. *Preparing California for Extreme Heat: Guidance and Recommendations*. Available at: https://toolkit.climate.gov/reports/preparing-california-extreme-heat-guidance-and-recommendations. Accessed March 10, 2019.
14 CNRA, 2014. *Safeguarding California: Reducing Climate Risk, an Update to the 2009 California Climate Adaptation Strategy*. Available: http://resources.ca.gov/climate/safeguarding/. Accessed: March 10, 2019.
15 *Ibid.*
16 *Ibid.*

Ecosystems and Wildlife

Increases in global temperatures and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. Increasing concentrations of GHGs are likely to accelerate the rate of climate change. Scientists expect that the average global surface temperature could rise by 2-11.5°F (1.1-6.4°C) by 2100, with significant regional variation.[17] Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Sea level could rise as much as two feet along most of the United States coastline. With climate change, ecosystems and wildlife will be challenged by the spread of invasive species, barriers to species migration or movement in response to changing climatic conditions, direct impacts to species health, and mismatches in timing between seasonal life-cycle events such as species migration and food availability.[18]

17 National Research Council, 2010. *Advancing the Science of Climate Change*. Available at: http://dels.nas.edu/resources/static-assets/materials-based-on-reports/reports-in-brief/Science-Report-Brief-final.pdf. Accessed: March 11, 2019.

18 CNRA, 2014. *Safeguarding California: Reducing Climate Risk, an Update to the 2009 California Climate Adaptation Strategy*. Available: http://resources.ca.gov/climate/safeguarding/. Accessed: March 10, 2019.

Chapter 2
Applicable Regulations

2.1 Federal

U.S. Environmental Protection Agency "Endangerment" and "Cause or Contribute" Findings

The U.S. Supreme Court held that the United States Environmental Protection Agency (U.S. EPA) must consider regulation of motor vehicle GHG emissions. In *Massachusetts v. Environmental Protection Agency* et al., twelve states and cities, including California, together with several environmental organizations sued to require the U.S. EPA to regulate GHGs as pollutants under the CAA (127 S. Ct. 1438 (2007)). The Supreme Court ruled that GHGs fit within the CAA's definition of a pollutant and the U.S. EPA had the authority to regulate GHGs.

On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- ***Endangerment Finding:*** The current and projected concentrations of the six key GHGs—CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations.

- ***Cause or Contribute Finding:*** The combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

These findings did not, by themselves, impose any requirements on industry or other entities. However, these actions were a prerequisite for implementing GHG emissions standards for vehicles.

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, the U.S. EPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule is a response to the fiscal year (FY) 2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110-161), that required the U.S. EPA to develop "…mandatory reporting of GHGs above appropriate thresholds in all sectors of the economy…." The Reporting Rule will apply to most entities that emit 25,000 metric tons of CO_2e or more per year. Starting in 2010, facility owners are required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. The Reporting Rule also mandates recordkeeping and administrative requirements in order for the U.S. EPA to verify annual GHG emissions reports.

Vehicle Emissions Standards

On May 19, 2009, the President announced a national policy for fuel efficiency and emissions standards in the United States auto industry. The adopted federal standard applies to passenger cars and light-duty trucks for model years 2012 through 2016. The rule surpasses the prior Corporate Average Fuel Economy standards and requires an average fuel economy standard of 35.5 miles per gallon (mpg) and 250 grams of CO_2 per mile by model year 2016, based on USEPA calculation methods. These standards were formally adopted on April 1, 2010.

In August 2012, standards were adopted for model year 2017 through 2025 for passenger cars and light-duty trucks. 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. According to the U.S. EPA, a model year 2025 vehicle would emit one-half of the GHG emissions from a model year 2010 vehicle.[19] Notably, the State of California harmonized its vehicle efficiency standards through 2025 with the federal standards at this time (see Advanced Clean Car initiative below).

In August 2018, the U.S. EPA and the National Highway Traffic Safety Administration (NHTSA) proposed maintaining the 2020 CAFE and CO_2 standards for model years 2021 through 2026. The estimated CAFE and CO_2 standards for model year 2020 are 43.7 mpg and 204 grams of CO_2 per mile for passenger cars and 31.3 mpg and 284 grams of CO_2 per mile for light trucks, projecting an overall industry average of 37 mpg, as compared to 46.7 mpg under the standards issued in 2012. A final rule is expected in 2019.

2.2 State of California

California has promulgated a series of executive orders, laws, and regulations aimed at reducing both the level of GHGs in the atmosphere and emissions of GHGs from commercial and private activities within the State. The major components of California's climate protection initiative are reviewed below.

California Environmental Quality Act and Senate Bill 97

Under CEQA lead agencies are required to disclose the reasonably foreseeable adverse environmental effects of projects they are considering for approval. GHG emissions have the potential to adversely affect the environment because they contribute to global climate change. In turn, global climate change has the potential to raise sea levels, alter rainfall and snowfall, and affect habitat.

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is a prominent environmental issue requiring analysis under CEQA. This bill directed the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Natural Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions,

[19] US EPA, 2012. 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards. Available at: https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-model-year-2017-and-later-light-duty-vehicle . Accessed: March 11, 2019.

as required by CEQA, no later than July 1, 2009. The California Natural Resources Agency was required to certify or adopt those guidelines by January 1, 2010. On December 30, 2009, the Natural Resources Agency adopted amendments to the State CEQA Guidelines, as required by SB 97.[20] These State CEQA Guidelines amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The amendments became effective March 18, 2010.

State CEQA Guidelines

The State CEQA Guidelines are embodied in the California Code of Regulations (CCR), Public Resources Code, Division 13, starting with Section 21000. State CEQA Guidelines section 15064.4 specifically addresses the significance of GHG emissions, requiring a lead agency to make a "good-faith effort" to "describe, calculate or estimate" GHG emissions in CEQA environmental documents. Section 15064.4 further states that the analysis of GHG impacts should include consideration of (1) the extent to which the project may increase or reduce GHG emissions, (2) whether the project emissions would exceed a locally applicable threshold of significance, and (3) the extent to which the project would comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions." The CEQA Guidelines also state that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including plans or regulations for the reduction of greenhouse gas emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located (State CEQA Guidelines section 15064(h)(3)).

The CEQA Guidelines do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions, nor do they set a numerical threshold of significance for GHG emissions. The 2009 amendments also include a new Subdivision 15064.7(c) which clarifies that in developing thresholds of significance, a lead agency may appropriately review thresholds developed by other public agencies, or recommended by other experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence.

The California Natural Resources Agency has also clarified that the amended CEQA Guidelines focus on the effects of GHG emissions as cumulative impacts, and that they should be analyzed in the context of CEQA's requirements for cumulative impact analysis (see Section 15064(h)(3)).[21]

CEQA Guidelines section 15126.4(c) includes the following direction on measures to mitigate GHG emissions, when such emissions are found to be significant:

> *Consistent with Section 15126.4(a), lead agencies shall consider feasible means, supported by substantial evidence and subject to monitoring or reporting, of*

[20] CNRA, 2009. CEQA Guidelines Amendments, sections 15064.4, 15183.5, 15364.5. Available: http://resources.ca.gov/ceqa/guidelines/documents_uploaded_during_the_rulemaking_process_for_sb_97.html. Accessed: May 7, 2019.

[21] CNRA, 2009. Final Statement of Reasons for Regulatory Action, December 2009, page 20-26. Available: http://resources.ca.gov/ceqa/docs/Final_Statement_of_Reasons.pdf. Accessed: March 15, 2019.

mitigating the significant effects of greenhouse gas emissions. Measures to mitigate the significant effects of greenhouse gas emissions may include, among others:

(1) Measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency's decision;

(2) Reductions in emissions resulting from a project through implementation of project features, project design, or other measures;

(3) Off-site measures, including offsets that are not otherwise required, to mitigate a project's emissions;

(4) Measures that sequester greenhouse gases; and

(5) In the case of the adoption of a plan, such as a general plan, long range development plan, or plans for the reduction of greenhouse gas emissions, mitigation may include the identification of specific measures that may be implemented on a project-by project basis. Mitigation may also include the incorporation of specific measures or policies found in an adopted ordinance or regulation that reduces the cumulative effect of emissions.

California Greenhouse Gas Reduction Targets

Executive Order S-3-05

The Governor announced on June 1, 2005, through Executive Order S-3-05,[22] 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.

Executive Order B-30-15

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

- 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.

[22] California Office of the Governor, 2005. Executive Order S-3-05. Available at: https://www.climatechange.ca.gov/state/executive_orders.html. Accessed March 4, 2019.

California Health and Safety Code, Division 25.5 – California Global Warming Solutions Act of 2006 (AB 32)

In 2006, the California State Legislature adopted Assembly Bill (AB) 32 (codified in the California Health and Safety Code [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 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.

A specific requirement of AB 32 was to prepare a Climate Change Scoping Plan for achieving the maximum technologically feasible and cost-effective GHG emission reduction by 2020. CARB developed and approved the initial Scoping Plan in 2008, outlining the regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs that would be needed to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the State's long-range climate objectives.[23]

The First Update to the Scoping Plan was approved by CARB in May 2014 and built upon the initial Scoping Plan with new strategies and recommendations. In 2014, CARB revised the target using the GWP values from the IPCC AR4 and determined that the 1990 GHG emissions inventory and 2020 GHG emissions limit is 431 MMTCO2e. CARB also updated the State's BAU 2020 emissions estimate to account for the effect of the 2007–2009 economic recession, new estimates for future fuel and energy demand, and the reductions required by regulation that were adopted for motor vehicles and renewable energy.[24]

Senate Bill 32

In 2016, Senate Bill (SB) 32 and its companion bill AB 197, amended HSC Division 25.5 and established a new climate pollution reduction target of 40 percent below 1990 levels by 2030, while including provisions to ensure the benefits of state climate policies reach into disadvantaged communities.

2017 Climate Change Scoping Plan Update

In response to SB 32 and the 2030 GHG reduction target, CARB approved the 2017 Climate Change Scoping Plan Update (2017 Scoping Plan Update) in December 2017.[25] The 2017 Scoping Plan Update outlines the proposed framework of action for achieving the 2030 GHG target of 40 percent reduction in GHG emissions relative to 1990 levels (CARB, 2017). The 2017 Scoping Plan

23 CARB, 2008. *Climate Change Scoping Plan*. Available: https://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm. Accessed March 4, 2019.

24 CARB, 2014. *First Update to the Climate Change Scoping Plan*. Available: https://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm. Accessed: March 4, 2019.

25 CARB, 2017. *California's 2017 Climate Change Scoping Plan.* Available at: https://www.arb.ca.gov/cc/scopingplan/scopingplan.htm. Accessed March 4, 2019.

Update identifies key sectors of the State's implementation strategy, which includes improvements in low carbon energy, industry, transportation sustainability, natural and working lands, waste management, and water. Through a combination of data synthesis and modeling, CARB determined that the target Statewide 2030 emissions limit is 260 MMTCO2e, and that further commitments will need to be made to achieve an additional reduction of 50 MMTCO2e beyond current policies and programs. The cornerstone of the 2017 Scoping Plan Update is an expansion of the Cap-and-Trade program to meet the aggressive 2030 GHG emissions goal and ensure achievement of the 2030 limit set forth by E.O. B-30-15.

The 2017 Scoping Plan Update's strategy for meeting the State's 2030 GHG target incorporates the full range of legislative actions and state-developed plans that have relevance to the year 2030. These include:

- Extending the low carbon fuel standard (LCFS) beyond 2020 and increasing the carbon intensity reduction requirement to 18 percent by 2030;
- SB 350, which increase renewables portfolio standard (RPS) to 50 percent and requires a doubling of energy efficiency for existing buildings by 2030;
- The 2016 Mobile Source Strategy is estimated to reduce emissions from mobile sources including an 80 percent reduction in smog-forming emissions and a 45 percent reduction in diesel particulate matter from 2016 level in the South Coast Air Basin, a 45 percent reduction in GHG emissions, and a 50 percent reduction in the consumption of petroleum-based fuels;
- The Sustainable Freight Action Plan to improve freight efficiency and transition to zero emission freight handling technologies (described in more detail below);
- SB 1383, which requires a 50 percent reduction in anthropogenic black carbon and a 40 percent reduction in hydrofluorocarbon and methane emissions below 2013 levels by 2030; and
- Assembly Bill 398, which extends the state Cap-and-Trade Program through 2030.

In the 2017 Scoping Plan Update, CARB recommends statewide targets of no more than six metric tons CO2e per capita by 2030 and no more than two metric tons CO2e per capita by 2050. CARB acknowledges that since the statewide per capita targets are based on the statewide GHG emissions inventory that includes all emissions sectors in the State, it is appropriate for local jurisdictions to derive evidence-based local per-capita goals based on local emissions sectors and growth projections. To demonstrate how a local jurisdiction can achieve their long-term GHG goals at the community plan level, CARB recommends developing a geographically-specific GHG reduction plan (i.e., climate action plan) consistent with the requirements of CEQA Section 15183.5(b). A so-called "CEQA-qualified" GHG reduction plan, once adopted, can provide local governments with a streamlining tool for project-level environmental review of GHG emissions, provided there are adequate performance metrics for determining project consistency with the plan. [26]

[26] CARB, 2017. *California's 2017 Climate Change Scoping Plan*. Available: www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf. Accessed March 9, 2019. At page 101.

Cap-and-Trade Program

Initially, authorized by the California Global Warming Solutions Act of 2006 (AB 32), and extended through the year 2030 with the passage of Assembly Bill 398 (2017), the California Cap-and-Trade Program is a core strategy that the state is using to meet its GHG reduction targets for 2020 and 2030, and ultimately achieve an 80 percent reduction from 1990 levels by 2050. CARB has designed and adopted a California Cap-and-Trade Program to reduce GHG emissions from major sources (deemed "covered entities") by setting a firm cap on statewide GHG emissions and employing market mechanisms to achieve reductions.[27] Under the Cap-and-Trade program, an overall limit is established for GHG emissions from capped sectors (e.g., electricity generation, petroleum refining, cement production, and large industrial facilities that emit more than 25,000 metric tons CO_2e per year) and declines over time, and facilities subject to the cap can trade permits to emit GHGs. The statewide cap for GHG emissions from the capped sectors commenced in 2013 and declines over time, achieving GHG emission reductions throughout the Program's duration.[28]

If California's direct regulatory measures reduce GHG emissions more than expected, then the Cap-and-Trade Program will be responsible for relatively fewer emissions reductions. If California's direct regulatory measures reduce GHG emissions less than expected, then the Cap-and-Trade Program will be responsible for relatively more emissions reductions. In other words, the Cap-and-Trade Program functions similarly to an insurance policy for meeting California's 2020 and 2030 GHG emissions reduction mandates.

Transportation Sector

Assembly Bill 1493

In 2002, then-Governor Gray Davis signed Assembly Bill (AB) 1493, which required the CARB to develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks and other vehicles determined by the CARB to be vehicles whose primary use is noncommercial personal transportation in the state."

To meet the requirements of AB 1493, the CARB approved amendments to the California Code of Regulations (CCR) in 2004, requiring automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty vehicle with a gross vehicle weight [GVW] rating of less than 10,000 pounds and that is designed primarily for the transportation of persons), beginning with model year 2009. For passenger cars and light-duty trucks with a loaded vehicle weight (LVW) of 3,750 pounds or less, the GHG emission limits for model year 2016 are approximately 37 percent lower than the limits for the first year of the regulations, model year 2009. For light-duty trucks with an LVW of 3,751 pounds to a GVW of 8,500 pounds, as well as for medium-duty passenger vehicles, GHG emissions will be reduced approximately 24 percent between 2009 and 2016.

[27] 17 CCR §§ 95800 to 96023.
[28] See generally 17 CCR §§ 95811, 95812.

Because the Pavley standards (named for the bill's author, state Senator Fran Pavley) would impose stricter standards than those under the CAA, California applied to the U.S. EPA for a waiver under the CAA; this waiver was initially denied in 2008. In 2009, however, the U.S. EPA granted the waiver.

As discussed previously, the federal government adopted standards for model year 2012 through 2016 light-duty vehicles. In addition, the USEPA and USDOT have adopted GHG emission standards for model year 2017 through 2025 vehicles. These standards are slightly different from the State's standards (described in the Advanced Clean Car Program), but the State of California has agreed not to contest them, in part due to the fact that while the national standard would achieve slightly less reductions in California, it would achieve greater reductions nationally and is stringent enough to meet state GHG emission reduction goals.

Advanced Clean Car Program

In 2012, CARB approved the Pavley II (LEV III) Advanced Clean Cars program, an emissions-control scheme for model years 2015 through 2025 that allows manufacturers to comply with the 2017 through 2025 national standards while meeting meet state law. The program includes components to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars. The zero emissions vehicle (ZEV) program will act as the focused technology of the Advanced Clean Cars program by requiring manufacturers to produce increasing numbers of ZEVs and plug-in hybrid electric vehicles (PHEV) in the 2018 to 2025 model years.[29]

Mobile Source Strategy

In May 2016, CARB released the updated Mobile Source Strategy that demonstrates how the State can simultaneously meet air quality standards, achieve GHG emission reduction targets, decrease health risk from transportation emissions, and reduce petroleum consumption over the next fifteen years. The strategy promotes a transition to zero-emission and low-emission vehicles, cleaner transit systems and reduction of VMTs. The Mobile Source Strategy calls for 1.5 million ZEVs (including plug-in hybrid electric, battery-electric, and hydrogen fuel cell vehicles) by 2025 and 4.2 million ZEVs by 2030. It also calls for more stringent GHG requirements for light-duty vehicles beyond 2025 as well as GHG reductions from medium-duty and heavy-duty vehicles and increased deployment of zero-emission trucks primarily for class 3 – 7 "last mile" delivery trucks in California. Statewide, the Mobile Source Strategy would result in a 45 percent reduction in GHG emissions, and a 50 percent reduction in the consumption of petroleum-based fuels.[30]

Tractor-Trailer Greenhouse Gas Regulation

CARB approved the Tractor-Trailer Greenhouse Gas regulation to reduce GHG emissions produced by certain heavy-duty tractor-trailers. The tractors and trailers subject to this regulation

29 CARB, 2017. *California's 2017 Climate Change Scoping Plan*. Available: www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf. Accessed March 10, 2019.

30 CARB, 2016. *Mobile Source Strategy*. Available: https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.htm. Accessed March 10, 2019.

must either use U.S. EPA "SmartWay" certified tractors and trailers, or be retrofitted with SmartWay verified technologies.

The reduction in GHG emissions will be achieved by requiring the use of aerodynamic tractors and trailers that are also equipped with low rolling resistance tires. The regulation applies primarily to owners of 53-foot or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the heavy-duty tractors that pull them on California highways. These owners are responsible for replacing or retrofitting their affected vehicles with compliant aerodynamic technologies and low rolling resistance tires. All owners, regardless of where their vehicles are registered, must comply with the regulation when they operate their affected vehicles on California highways. Drayage tractors and trailers that operate within a 100-mile radius of a port or intermodal rail yard are exempt.

California Sustainable Freight Action Plan (2016)

California Sustainable Freight Action Plan includes strategies to improve freight efficiency and transition to zero emission freight handling technologies. It includes goals to achieve 25 percent improvement of freight system efficiency by 2030, and to deploy over 100,000 freight vehicles and equipment capable of zero emission operation, and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030.[31]

CARB Advanced Clean Local Truck Rule

The goal with the Advanced Clean Local Truck Rule is to accelerate the early market adoption of zero emission trucks that are usually centrally fueled, have duty cycles with low average speed and stop-and-go operation. The rule focuses on urban, mostly vocational trucks, but includes class 7-8 urban goods movement trucks as well. The proposed regulatory schedule begins with the 2023 vehicle model year with early action credits given for pre- 2023 vehicle models. The regulation is scheduled for CARB board consideration in November 2018.

Low Carbon Fuel Standard (LCFS)

In January 2007, Governor Brown enacted Executive Order S-01-07, which mandates the following: (1) establish a statewide goal to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020; and (2) adopt a Low Carbon Fuel Standard (LCFS) for transportation fuels in California. The overall goal of the low carbon fuel standard is to lower the carbon intensity of California transportation fuel. With adoption of the 2017 Scoping Plan Update, the standard has been changed to a reduction in fuel carbon intensity of at least 18 percent by 2030.

Land Use Transportation Planning

SB 375 (Chapter 728, Statutes of 2008), which establishes mechanisms for the development of regional targets for reducing passenger vehicle greenhouse gas emissions, was adopted by the State on September 30, 2008. Under SB 375, CARB is required, in consultation with the state's

[31] CalTrans, 2016. *Sustainable Freight Action Plan*. Available: http://dot.ca.gov/hq/tpp/offices/ogm/cs_freight_action_plan/theplan.html. Accessed: March 10, 2019.

Metropolitan Planning Organizations (MPOs), to set regional GHG reduction targets for the passenger vehicle and light-duty truck sector for 2020 and 2035.[32]

Under SB 375, the regional reduction target must be incorporated within that region's Regional Transportation Plan (RTP), which is used for long-term transportation planning, in a Sustainable Communities Strategy (SCS). Certain transportation planning and programming activities need to be consistent with the SCS; however, SB 375 expressly provides that the SCS does not regulate the use of land, and further provides that local land use plans and policies (e.g., general plan) are not required to be consistent with either the RTP or SCS.

In February 2011, CARB adopted the final GHG emissions reduction targets for the Metropolitan Transportation Commission/Association of Bay Area Governments (MTC/ABAG), which is the MPO for the region in which the City is located. In March 2018, the CARB updated the SB 375 targets for ABAG to require an 10 percent reduction by 2020 and a 19 percent reduction by 2035 in per capita passenger vehicle GHG emissions (CARB, 2018).[33]

Energy Sector

SB 97, enacted in 2007, directed OPR to develop California Environmental Quality Act (CEQA) Guidelines (*CEQA Guidelines*) "for the mitigation of GHG emissions or the effects of GHG emissions." In December 2009, OPR adopted amendments to the *CEQA Guidelines*, Appendix G Environmental Checklist, which created a new resource section for GHG emissions and indicated criteria that may be used to establish significance of GHG emissions. Appendix F of the *CEQA Guidelines* states that, in order to ensure that energy implications are considered in project decisions, the potential energy implications of a project shall be considered in an EIR, to the extent relevant and applicable to the project. Appendix F of the *CEQA Guidelines* further states that a project's energy consumption and proposed conservation measures may be addressed, as relevant and applicable, in the Project Description, Environmental Setting, and Impact Analysis portions of technical sections, as well as through mitigation measures and alternatives. In accordance with Appendix F of the CEQA Guidelines, relevant information that addresses the energy implications of the Project is provided in *Section 3.5 Energy Demand and Conservation*.

Title 24 Building Energy Efficiency Standards

Part 11 of the Title 24 Building Energy Efficiency Standards is referred to as the California Green Building Standards (CALGreen) Code. CALGreen is intended to encourage more sustainable and environmentally friendly building practices, require low-pollution emitting substances that cause less harm to the environment, conserve natural resources, and promote the use of energy-efficient materials and equipment. Since 2011, the CALGreen Code is mandatory for all new residential and non-residential buildings constructed in the state. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design and overall environmental quality. The CALGreen Code was most recently updated in 2016 to include new

[32] CARB, Sustainable Communities. Available: https://www.arb.ca.gov/cc/sb375/sb375-rd.htm. Accessed March 10, 2019.

[33] California Air Resources Board, 2019. *2017 Scoping Plan-Identified VMT Reductions and Relationship To State Climate Goals*, Available at https://ww2.arb.ca.gov/sites/default/files/2019-01/2017_sp_vmt_reductions_jan19.pdf. Accessed May 8, 2019.

mandatory measures for residential and nonresidential uses; the new measures took effect on January 1, 2017.[34]

The CEC first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (CCR, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally intended to reduce GHG emissions, increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically (typically every three years) to allow for the consideration and inclusion of new energy efficiency technologies and methods.[35]

The current Title 24, Part 6 standards (2016) were made effective on January 1, 2017. The next update to the Title 24 energy efficiency standards (2019 standards) go into effect on January 1st, 2020.

Renewables Portfolio Standard

SB 1078 established the Renewables Portfolio Standard (RPS) in 2002, which requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from eligible renewable sources by 2017. SB 107 changed the target date to 2010. In November 2008, Executive Order S-14-08 expanded the state's RPS goal to 33 percent renewable power by 2020. In September 2009, Executive Order S-21-09 directed CARB (under its AB 32 authority) to enact regulations to help the state meet the 2020 goal of 33 percent renewable energy. The 33 percent by 2020 RPS goal was codified in April 2011 with Senate Bill X1-2. This new RPS applies to all electricity retailers in the state, including publicly owned utilities (POUs), investor-owned utilities, electricity service providers, and community choice aggregators. Senate Bill 350 was signed in October 2015, which requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030. Most recently, Senate Bill 100, signed by Governor Brown on September 10, 2018, increases the RPS requirement to 60 percent eligible renewables by 2030 and 100 percent by 2045.

2.3 Regional

Bay Area Air Quality Management District

BAAQMD is the regional government agency that regulates sources of air pollution within the nine San Francisco Bay Area counties. The BAAQMD regulates GHG emissions through the following plans, programs, and guidelines.

[34] California Building Standards Commission (CBSC), 2016. 2016 California Green Building Standards Code (Part 11 of Title 24). Available at https://www.dgs.ca.gov/BSC/Resources/Page-Content/Building-Standards-Commission-Resources-List-Folder/CALGreen. Accessed March 11, 2019.

[35] California Energy Commission (CEC), 2016. California's 2016 Building Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at http://www.energy.ca.gov/2015publications/CEC-400-2015-037/CEC-400-2015-037-CMF.pdf. Accessed March 5, 2019.

Clean Air Plan

BAAQMD and other air districts prepare clean air plans in accordance with the State and federal Clean Air Acts. On April 19, 2017, the BAAQMD Board of Directors adopted the 2017 Clean Air Plan *Spare the Air, Cool the Climate,* an update to the 2010 Clean Air Plan. The Clean Air Plan is a comprehensive plan that focuses on the closely-related goals of protecting public health and protecting the climate. Consistent with the state's GHG reduction targets, the plan lays the groundwork for a long-term effort to reduce Bay area GHG emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050.

BAAQMD Climate Protection Program

BAAQMD established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the San Francisco Bay Area Air Basin. The climate protection program includes measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative sources of energy, all of which assist in reducing emissions of GHG and in reducing air pollutants that affect the health of residents. BAAQMD also seeks to support current climate protection programs in the region and to stimulate additional efforts through public education and outreach, technical assistance to local governments and other interested parties, and promotion of collaborative efforts among stakeholders.

BAAQMD CEQA Air Quality Guidelines

BAAQMD CEQA Air Quality Guidelines were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background air quality information. The guidelines also include recommended assessment methodologies for air toxics, odors, and greenhouse gas emissions. In June 2010, the BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of the CEQA Guidelines, which included significance threshold for GHG emissions based on the emission reduction goals for 2020 articulated by the State Legislature in AB 32. The first threshold, 1,100 MT CO2e per year, is a numeric emissions level below which a project's contribution to global climate change would be less than cumulatively considerable. For larger and mixed-use projects, the Guidelines state that emissions would be less than cumulatively significant if the project as a whole would result in an efficiency of 4.6 MT CO2e per service population or better.[36]

On March 5, 2012, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds of significance in the BAAQMD CEQA Air Quality Guidelines. That decision was appealed to the Court of Appeal and one of the issues in the case has been decided by the California Supreme Court. The Supreme Court found that CEQA does not require an analysis of how existing environmental conditions will impact future residents or users of a proposed project, and remanded the case down for the lower court to decide remaining issues. Following the Superior Court order, the BAAQMD released revised

[36] Bay Area Air Quality Management District, 2010. *CEQA Air Quality Guidelines*. Available: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/draft_baaqmd_ceqa_guidelines_may_2010_final.pdf?la=en. Accessed: May 7, 2019.

CEQA Air Quality Guidelines in May of 2012 that include guidance on calculating air pollution emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures, and which set aside the significance thresholds. There was no challenge to BAAQMD's 2010 greenhouse gas thresholds or the substantial evidence supporting those thresholds.[37] In May 2017, the Air District published a new version of the Guidelines, which included no changes to the greenhouse gas thresholds.[38]

Under BAAQMD's Air Quality Guidelines, a local government may prepare a qualified GHG Reduction Strategy that is consistent with AB 32 goals. If a project is consistent with an adopted qualified GHG Reduction Strategy and General Plan that addresses the project's GHG emissions, it can be presumed that the project will not have significant GHG emissions under CEQA. The City of Pleasanton's CAP is considered a qualified GHG Reduction Strategy for achieving the AB 32 target of 1990 emissions by the year 2020.

Metropolitan Transportation Commission/Association of Bay Area Governments Sustainable Communities Strategy.

MTC is the federally recognized metropolitan planning organization (MPO) for the nine county Bay Area, which includes Alameda County and the City of Oakland. On July 18, 2013, the Plan Bay Area was jointly approved by ABAG's Executive Board and by MTC. The Plan includes the region's Sustainable Communities Strategy, as required under SB 375, and the 2040 Regional Transportation Plan. The Sustainable Communities Strategy lays out how the region will meet GHG reduction targets set by CARB.[39] CARB's current targets call for the region to reduce per capita vehicular GHG emissions 10 percent by 2020 and 19 percent by 2035 from a 2005 baseline.[40] A central greenhouse gas reduction strategy of Plan Bay Area is the concentration of future growth within Priority Development Areas (PDAs) and Transit Priority Areas (TPAs). To be eligible for PDA designation, an area must be within an existing community, near existing or planned fixed transit or served by comparable bus service, and planned for more housing. SB 375 defines TPA-eligible areas as places within one-half mile of a major transit stop or a high-quality transit corridor. The Project site is not located within a PDA. By virtue of its proximity to the West Dublin/Pleasanton BART station, the northwestern portion of the Project site is located within a TPA. However, the Project site is not within an area covered by a specific plan and therefore does not quality for CEQA streamlining for projects under SB 743.

On July 26, 2017, MTC adopted Plan Bay Area 2040, a focused update that builds upon the growth pattern and strategies developed in the original Plan Bay Area but with updated planning

[37] Bay Area Air Quality Management District (BAAQMD), 2012. *BAAQMD CEQA Air Quality Guidelines Final*, May 2012. Available: http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines. Accessed March 6, 2019.

[38] Bay Area Air Quality Management District (BAAQMD), 2017. Clean Air Plan. Adopted April 19, 2017. Available: http://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans. Accessed March 6, 2019.

[39] Association of Bay Area Governments and Metropolitan Transportation Commission, 2013. Plan Bay Area 2040. Adopted July 18, 2013. Available: http://files.mtc.ca.gov/pdf/Plan_Bay_Area_FINAL/Plan_Bay_Area.pdf. Accessed March 14, 2019.

[40] California Air Resources Board, 2018. SB 375 Regional Greenhouse Gas Emissions Reduction Targets. Available: https://www.arb.ca.gov/cc/sb375/finaltargets2018.pdf. Accessed March 11, 2019.

assumptions that incorporate key economic, demographic and financial trends since the original plan was adopted.[41]

2.4 City of Pleasanton

City of Pleasanton General Plan

The City of Pleasanton General Plan includes the policies related to improving air quality and climate change impacts in its Air Quality and Climate Change Element. The same policies listed in the Section 3.2.3 of the Air Quality Section would also be relevant to reducing GHG emissions.

City of Pleasanton Climate Action Plan

The Pleasanton Climate Action Plan (CAP) includes a citywide GHG emissions inventory. This citywide GHG emissions inventory reflects all the energy used and waste produced within the Pleasanton city limits. As shown in **Table 2**, energy consumers in Pleasanton emitted approximately 770,844 million metric tons of CO_2e in 2005 from all major sources, more than half of which were from transportation sources.

TABLE 2
PLEASANTON COMMUNITY-WIDE GHG EMISSIONS BY SECTOR (MT CO2E) 2005

GHG Emissions Source	Metric Tons of Carbon Dioxide Equivalent (CO2e)	Percent of Total
Transportation (on-road)	401,550	52.1%
Transportation (off-road)	25,410	3.3%
Commercial/Industrial Electricity	105,107	13.6%
Commercial/Industrial Natural Gas	46,753	6.1%
Residential Natural Gas	66,684	8.7%
Residential Electricity	46,881	6.1%
Solid Waste Disposal	38,826	5.0%
Water and Wastewater Systems	34,264	4.4%
Municipal Operations	5,370	0.7%
Total	**770,844**	**100%**

SOURCE: City of Pleasanton, 2012

As described in the CAP, the City has a target to reduce emissions levels 15 percent below the 2005 baseline by the year 2020, which equates to 655,218 MT CO_2e per year for community emissions. This value represents 115,626 MT CO_2e below the baseline, and 306,331 MT CO_2e below the projected 2020 business-as-usual emissions scenario (a reduction of approximately 32 percent).

Several high-impact state-wide measures included in the State's AB 32 Scoping Plan are expected to provide significant emissions reduction benefits for the City of Pleasanton, including the Low Carbon Fuel Standard (LCFS), the Pavley Bill for reducing passenger vehicle emissions (Assembly Bill 1493), and the Renewable Portfolio Standard. Two additional state-wide measures in the AB

[41] Association of Bay Area Governments and Metropolitan Transportation Commission, 2017. Plan Bay Area 2040. Adopted July 26, 2017. Available: https://www.planbayarea.org/. Accessed March 6, 2019.

32 Scoping Plan are expected to reduce emissions from passenger vehicles and heavy/medium-duty trucks because of efficiencies gains realized by manufacturers.

After crediting emissions reductions of 194,017 MT CO_2e from the expected impact of state-wide measures included in the AB 32 Scoping Plan, and the projected impact of rising fuel prices on driving behavior, as described in the CAP, Pleasanton's projected city-wide GHG emissions would be 93,585 MT CO_2e per year above the AB 32 target by 2020. As summarized in **Table 3** below, implementation of the measures set forth in the CAP are expected to reduce city-wide emissions by 101,649 MT CO_2e per year by 2020. This would reduce city-wide emissions approximately 8,064 MT CO_2e below the AB 32 target.

TABLE 3
PROJECTED EMISSIONS REDUCTIONS FROM PLEASANTON CLIMATE ACTION PLAN STRATEGIES

	Strategy	Annual GHG Reduction Potential (MT CO_2e)
SW2	Increase recycling, organics diversion, and waste reduction associated with the entire community	29,605
EC2	Leverage outside programs to increase energy efficiency	17,394
EC4	Develop programs to increase energy efficiency	9,342
EC3	Establish and promote financing and financial incentive programs to support energy efficiency	7,416
LU1	Support infill and higher density development	6,898
TDM2	Promote alternatives to work and school commutes	6,558
LU2	Support mixed-use infill and new development near local-serving commercial areas	5,845
EC1	Use city codes, ordinances, and permitting to enhance green building and energy efficiency	3,773
TDM1	Use parking pricing/policy to discourage SOV travel	3,174
ER1	Implement local ordinances and permitting processes to support renewable energy	2,389
TR1	Improve transit system and ridership	2,377
LU3	Improve transportation efficiency through design improvements	2,202
ER2	Develop programs to promote on-site renewable energy to the community	1,519
NM1	Create and maintain a safe, convenient, and effective system for pedestrians and bicyclists	1,280
EG1	Promote green building and energy efficient development for government operations and city infrastructure	1,194
VE2	Develop a city fleet replacement program	312
WA1	Conserve community water through building and landscape design and improvements	272
WA3	Increase or establish use of reclaimed/grey water systems	98
WA2	Conserve municipal operations water	1
	Total	**101,649**

NOTE: This table is from the Table 3-2 of the CAP. See Chapter 3 of the CAP for a full and detailed description of each of these strategies, and Appendix E for detailed information on methods and assumptions used to quantify emissions reductions. See Appendix F for Baseline and Future Year VMT Estimates, and VMT reduction associated with CAP implementation.

Thus, as the result of implementing the CAP, the City would achieve consistency with the provisions of AB 32 as interpreted by the BAAQMD by meeting the community-wide emissions

reduction target of 15 percent below the City's 2005 baseline by the year 2020. The CAP relies on reductions from sectors such as energy conservation, and reductions associated with changes in personal behavior. The City will monitor progress toward achieving the 2020 emissions reduction target with regular updates of the community-wide inventory, and review of programs described in the CAP.

Chapter 3
GHG Quantification Methodology

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

3.1 Greenhouse Gas Emissions Estimates

This section relies on calculation guidance from state and regional agencies with scientific expertise in quantifying GHG emissions, such as CARB and the BAAQMD. GHG emissions from the projects construction and operation are estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2, which is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions from a variety of land use projects. CalEEMod was developed in collaboration with the air districts of California. Regional data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) have been provided by the various California air districts to account for local requirements and conditions. The model is considered to be an accurate and comprehensive tool for quantifying air quality and GHG impacts from land use projects throughout California.[42]

Construction Emissions

Construction of the proposed Project has the potential to generate GHG emissions through the use of heavy-duty construction equipment and through vehicle trips generated from construction workers traveling to and from the Project site. Construction emissions can vary from day to day, depending on the level of activity, the specific type of operation, and the prevailing weather conditions. The number and types of construction equipment, vendor trips (e.g., transport of building materials), and worker trips were based on the same assumptions used in the Air Quality Analysis and Health Risk Assessment (HRA) analyses prepared for the Project.

Operational Emissions

This analysis used CalEEMod version 2016.3.2 to estimate operational GHG emissions associated with project trips (light-duty vehicles), energy consumption (electricity and natural gas), solid waste, water and wastewater, and landscaping equipment. Additional operational GHG emission calculations were prepared outside of CalEEMod, including those for emergency generators, heavy duty delivery trucks, and transportation refrigeration units (TRU). Detailed calculations are

[42] See: http://www.aqmd.gov/caleemod/.

presented in Appendix A. The primary assumptions used to model operational GHG emissions are presented below.

Area Sources

Area sources of GHG emissions resulting from the operation of Project include equipment used to maintain landscaping. The combustion of fossil fuels to operate these equipment results in GHG emissions of CO_2 and smaller amounts of CH_4 and N_2O.

The emissions of GHGs associated with operational area sources under the Project are calculated using CalEEMod. The emissions for landscaping equipment are based on the size of the commercial land uses, the GHG emission factors for fuel combustion, and the GWP values for the GHGs emitted.

Energy Use

With regard to energy usage, the consumption of fossil fuels to generate electricity and to provide heating and hot water generates GHG emissions. Future fuel consumption rates are estimated based on specific square footage of the commercial land uses, as well as predicted water supply needs of the Project. Energy usage (off-site electricity generation and on-site natural gas consumption) for the Project is calculated within CalEEMod using the CEC's *California Commercial End Use Survey* (CEUS) data set, which provides energy demand by building type and climate zone.[43] This data set provides energy intensities of different land uses throughout the state and different climate zones. Default CalEEMod energy usage rates were adjusted to reflect the 2019 Title 24 Building Energy Efficiency Standards.

Electricity

The generation of electricity in California is achieved through the combustion of fossil fuels, primarily natural gas, using steam boilers, internal combustion engines, and combustion turbines. A portion of the electricity in California is imported from outside the state and is derived from the combustion of coal and other non-gaseous fossil fuels. The combustion of fossil fuels to produce electricity results in GHG emissions of CO_2 and smaller amounts of CH_4 and N_2O. The electricity generation occurs off-site; therefore, electricity use results in GHG emissions that are considered to be indirect.

Emissions of GHGs associated with operation of the Project's proposed uses are based on the size of the commercial land uses, the electrical demand factors for the land uses, the GHG emission factors for the electricity utility provider, and the GWP values for the GHGs emitted. Based on information provided by the City, the Costco store would consume approximately four million kilowatt-hours annually, therefore, the Costco's GHG emissions were based on this value.

Pacific Gas and Electric Company (PG&E) provides electric service to the Project site. Emission factors for CO_2 due to electrical generation to serve the electrical demands of the Project were obtained from The Climate Registry. The PG&E CO_2 emission factor for 2016 is provided below.

43 California Energy Commission, 2007. California Commercial End-Use Survey, http://capabilities.itron.com/CeusWeb/Chart.aspx. Accessed January 2018.

The rates for CH_4 and N_2O are CalEEMod default values. he factors listed below were applied in estimating project emissions for the Project's Phase 1 operations in 2021.

- CO_2: 294 lbs/MWh[44]
- CH_4: 0.029 lbs/MWh
- N_2O: 0.006 lbs/MWh

PG&E currently provides 33 percent of electricity via renewable sources[45] but would provide an increasing percentage from renewable sources in compliance with the RPS with 50 percent by 2025, 60 percent by 2030, and 100 percent by 2045. As a result, it is likely that the future year electricity GHG emissions would decline. Although PG&E would be required to provided 60 percent of electricity via renewable sources by 2030, there is uncertainty in the power mix distribution of the remaining 40 percent of energy sources such as natural gas, large hydroelectric, and unspecified sources. Using PG&E's power mix data from years 2012 to 2017, a 2030 CO_2 emissions factor was derived to be 276 lbs/MWh (for calculation details see Appendix A). This CO_2 factor was used in the analysis for operational GHG emissions from Full Buildout of the Project in 2031. CH_4 and N_2O emission factors for the Project's Full Buildout would remain based on CalEEMod default values. Electricity GHG emission factors for Full Buildout of the Project are provided below.

- CO_2: 276 lbs/MWh[46]
- CH_4: 0.029 lbs/MWh
- N_2O: 0.006 lbs/MWh

Natural Gas

Natural gas-related emissions of GHGs associated with operation of the Project are based on the size of the Project's proposed uses, the natural gas demand factors for the land uses, the default GHG emission factors for the natural gas combustion in CalEEMod, and the GWP values for the GHGs emitted.

Mobile Sources

Non-Delivery Vehicles

Mobile source emissions were calculated using CalEEMod and Project-specific trip rates. Compared to the land uses in the traffic study, the square footage of some land uses have changed slightly, therefore, the trip rates in the Project's traffic study were prorated based on square footage for each land use. The CalEEMod default fleet mix was modified to include all vehicle types except

44 The Climate Registry, 2018. Default Emission Factors for Reporting in 2018, https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf. Accessed March 2019.

45 PG&E, 2018 Corporate Responsibility and Sustainability Report, p.47, http://www.pgecorp.com/corp_responsibility/reports/2018/assets/PGE_CRSR_2018.pdf. Accessed March 2019.

46 The Climate Registry, 2018. Default Emission Factors for Reporting in 2018, https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf. Accessed March 2019.

heavy-heavy-duty (HHD) trucks because emissions for HHD trucks are calculated separately as described below.

Gas Station Idling

This analysis included tailpipe GHG emissions from customer vehicle queuing/idling. It was assumed each customer vehicle will idle at the gas station for a total of 10 minutes. This is a conservative assumption which is likely to overestimate the average customer idling time and idling-related emissions. The idling emission factors for customer vehicles at the gas station were derived from EMFAC2017 for gasoline-fueled light-duty vehicles at 5 miles per hour (mph), because EMFAC2017 does not generate idling emission factors for light-duty vehicles.

Delivery Truck Travel and Idling

This study conservatively assumed the delivery truck trips were additional to the project traffic estimated in the traffic study, i.e., all trips in the traffic study were assumed to be non-HHD vehicle trips and have already been accounted for in the non-delivery vehicles mobile source category above. Daily delivery truck vehicle trip GHG emissions were estimated outside of CalEEMod using emission factors from EMFAC2017 for the HHDT vehicle category. It was assumed that all trucks were diesel-powered. The Costco delivery truck fleet had an average model year of 2016 based on information provided by the City, therefore, emission factors for model year 2016 were applied to Costco delivery trucks. Non-Costco delivery trucks utilized emission factors based on an aggregate model year.

The number of daily delivery trucks for Phase 1A were provided by the City. Delivery trucks for Phase 1B and Phase 2 were estimated based on the Project's traffic study and the CalEEMod default fleet percentage for the HHDT vehicle category. The number of truck trips were estimated by multiplying the traffic study's daily trip rate by the HHDT portion of the CalEEMod fleet mix.[47] The number of trucks operating per day (i.e. round trips) are shown below in **Table 4**, **Daily Truck Deliveries**.

TABLE 4
DAILY TRUCK DELIVERIES

Source	Trucks per Day (round trips) [a, b]
Phase 1	
Costco Store	10
Costco Gas Station	6
Hotel/Retail	29
Phase 2	
Retail	165

[47] Johnson Drive Economic Development Zone Transportation Impact Analysis, Fehr & Peers, 2015.

NOTES:

[a] Daily trucks for the Costco store, and the Costco gas station were based on information from the City (including information provided by Costco). Daily trucks for the hotel and retail land uses were based on the daily trips generated by these land uses, as supplied by the SEIR's Traffic Study, and multiplied by the HHDT default fleet mix percentage from CalEEMod.

[b] The total number of trucks per day represents the number of daily round-trip truck trips assumed in the modeling.

Source: ESA 2019

Travel emissions for Costco delivery trucks, warehouse and gasoline fuel trucks, were based on travel distances to their respective distribution facilities which were provided by the City. Costco warehouse trucks delivering goods to Costco have an estimated trip length of 24.5 miles based on the distance to the Tracy depot. Costco trucks delivering fuel to the gas station have an estimated trip length of 30 miles based on the nearest fuel delivery location in Benicia. Travel emissions for non-Costco delivery trucks, such as for hotel and retail uses, were estimated assuming 7.3 miles per trip, which is the CalEEMod default trip length for "commercial-nonwork" trip types. Commercial-nonwork trips represent trips associated with commercial land uses other than customers or workers, such as delivery vehicles of goods.[48] For the Costco store and gas station trucks, emission factors for model year 2016 trucks were used to estimate emissions. According to the project applicant, the average model year for all Costco delivery trucks is 2016.

Idling emissions were estimated assuming 15 minutes of idling per trip, representing three separate 5-minute idling occurrences: check-in to the site or queuing at the site boundary upon arrival, on-site idling during loading/unloading, and check-out of the site or queuing at the site boundary upon departure.

TRUs

Delivery trucks would generate exhaust emissions from the use of truck-mounted diesel-powered TRUs. Consistent with the HRA, it was assumed that 75 percent of Costco trucks, 25 percent of all other project trucks (including hotel and retail delivery trucks) operate a TRU for two hours per trip on any given day. TRU GHG emissions were based on emission factors from the National Renewable Energy Laboratory.[49]

Electric Vehicle Charging Stations

As discussed in section 3.2 *Project Design Features*, the Costco warehouse will install 10 electric vehicle (EV) charging stations to be operational at the opening of the store in 2020. These stations will support the future use of electric and hybrid-electric vehicles by employees and visitors traveling to and from the site, and would reduce the Project's consumption of gasoline and diesel vehicle fuel. Use of the EV charging stations will result in indirect emissions from increased electricity use, but will result in emission reductions from conventional fossil-fueled vehicles.

48 CalEEMod User's Guide, Appendix A, p.21, http://caleemod.com/. Accessed January 2019.

49 National Renewable Energy Laboratory, 2010. Emissions of Transport Refrigeration Units with CARB Diesel, Gas-to-Liquid Diesel, and Emissions Control Devices, p. 5. https://www.nrel.gov/docs/fy10osti/46598.pdf. Accessed March 2019.

GHG emissions from the use of the EV charging stations were calculated using the following main assumptions: each charger would be a Level 2 charging station; the charge rate of each charging station is 25 miles per hour of charging;[50] the chargers would be used 10 hours/day on average over 358 days of store operation per year; each charger would consume 6.25 kW of electricity per hour of use;[51] the EV fuel economy is 0.25 kWh per mile of travel;[52,53] and the average emission factor for light-duty gasoline and diesel vehicles replaced by EVs is approximately 287 grams of CO_2e per mile for Phase 1 buildout in 2021 and approximately 203 grams of CO_2e per mile for full Project buildout in 2031 based on passenger vehicle emission factors from CalEEMod.

Water and Wastewater

Water and wastewater generated from the land uses under the Project would require energy to supply, distribute and treat. The combustion of fossil fuels to produce electricity results in GHG emissions of CO_2 and smaller amounts of CH_4 and N_2O. The electricity generation occurs off-site; therefore, the electricity use from water and wastewater results in GHG emissions that are considered to be indirect. Wastewater also results in emissions of GHGs from wastewater treatment systems (e.g., septic, aerobic, or lagoons) as well as from solids that are digested either through an anaerobic digester or with co-generation from combustion of digester gas.

The emissions of GHGs associated with wastewater treatment process emissions are calculated using CalEEMod. The emissions are based on the type of treatment (e.g., aerobic, facultative lagoons, septic systems). The emissions are calculated using the default settings in CalEEMod for the type of wastewater treatment and default water usage rates for all Project land uses with the exception of the Costco. Based on information provided by the City, the Costco store would consume approximately four million gallons of water annually, therefore, the Costco's GHG emissions from water consumption were based on this.

The CEC's estimate for energy intensity of the water use cycle in Northern California, as provided in the 2006 CEC report *Refining Estimates of Water-Related Energy Use in California*, is used to calculate the energy usage related to water supply, treatment, and distribution and wastewater treatment.[54] The same electricity GHG emissions factors discussed above are used for water and wastewater energy usage.

Solid Waste

The Project would generate solid waste from day-to-day operational activities, which generally consists of product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, plastic, and other items routinely disposed of in trash bins. A portion of the waste is diverted to waste recycling and reclamation facilities. Waste that is not diverted is usually sent to local landfills

50 County of Santa Clara Office of Sustainability, 2018. *Driving to Net Zero*, Table 1. March 9. Available at https://www.sccgov.org/sites/dnz/Documents/Task-5A-Santa-Clara-County-2017-Transportation-Survey-Report.pdf. Accessed April 2019.
51 *Ibid.*
52 *Ibid.*
53 US Department of Energy, n.d. *Alternative Fuels Data Center: Electric Vehicle Benefits and Considerations*. Available at https://afdc.energy.gov/fuels/electricity_benefits.html. Accessed April 2019.
54 California Energy Commission, 2006. Refining Estimates of Water-Related Energy Use in California, PIER Final Project Report, CEC-500-2006-118.

for disposal. Waste that is disposed in landfills results in GHG emissions of CO_2 and CH_4 from the decomposition of the waste that occurs over the span of many years.

Emissions of GHGs associated with solid waste disposal under the Project are calculated using CalEEMod. The emissions are based on the size of the commercial land uses, the waste disposal rate for the land uses, the waste diversion rate, the GHG emission factors for solid waste decomposition, and the GWP values for the GHGs emitted.

CalEEMod allows the input of several variables to quantify solid waste emissions. The model requires the amount of waste disposed, which is the product of the waste disposal rate times the land use units. The GHG emission factors, particularly for CH_4, depend on characteristics of the landfill, such as the presence of a landfill gas capture system and subsequent flaring or energy recovery. The default values, as provided in CalEEMod, for landfill gas capture (e.g., no capture, flaring, energy recovery) are statewide averages and are used in this assessment.

Stationary Sources

Emergency Generators

The analysis assumed the Costco store and hotel would each have a diesel emergency generator. The generators would be located at ground level. Each generator would have a rating of 1,300 horsepower (1,000 kilowatts). Diesel-powered emergency generator emissions were estimated outside of CalEEMod. Emissions were estimated based on a maximum annual non-emergency operation schedule of 50 hours each, consistent with emergency standby engine testing limits established in BAAQMD Regulation 9-8-330.3. Emissions factors for CO_2, CH_4, and N_2O from diesel fuel combustion were obtained from The Climate Registry.

3.2 Project Design Features

The Project would be designed to incorporate green building techniques as required by the Title 24 Building Energy standards. In addition, the Costco facility would include the following sustainability features.

Solar Energy on the Costco Warehouse

Costco shall install a rooftop solar photovoltaic (PV) system of at least 500 kilowatts (KW) of AC power within two years of the warehouse opening. Costco estimates that the rooftop system would consist of more than 2,000 modules with a total rating of 540,000 watts, and produce approximately 1,128,400 kWh of clean electricity annually. This system would generate 1,128 MWh of clean energy annually, reducing GHG emissions by approximately 150 MT CO_2e per year in 2021 and 141 MT CO_2e per year in 2031.[55]

Solar Energy on Other Buildings

The project sponsor shall install a rooftop solar photovoltaic system on the Phase 1 hotel(s) and retail space and on the Phase 2 retail space (or other Phase 2 development as may be approved). The systems shall be designed to maximize electricity production pending the final design of each

[55] This quantification uses the same electricity emission factors used in the analysis of Project emissions.

building type and shall cover a minimum of 50 percent of the available rooftop space not otherwise occupied by either occupiable space or equipment necessary to the function of the building, unless the project applicant provides a justification, to the satisfaction of the Community Development Director, as to why such solar panel installation is technically and/or financially infeasible. Should the Community Development Director so determine, the project applicant shall either install the maximum feasible number of solar panels or undertake comparable renewable energy production to the satisfaction of the Community Development Director. The final design of the PV systems is pending specific building and roof characteristics and the feasibility of PV installations during the time of construction and development. Since the areal extent of the rooftops for these buildings is not currently known, the solar generating capacity and resulting reduction in GHG emissions is not quantified at this time.

Energy Efficiency

All Costco stores have an Energy Management System. Costco's warehouse designs are consistent with the requirements of Leadership in Energy and Environmental Design (LEED) for green building design and construction. Buildings are designed with high efficiency HVAC systems and reflective roofs that lessen the heat gain on the roof. Mechanical heat from refrigeration systems is captured to preheat hot water tanks. All indoor and outdoor lighting in new construction utilizes high-efficiency LED technology.[56]

Recycled Materials

The Costco warehouse will be constructed of prefabricated structural steel containing approximately 80 percent recycled content. The building insulation will utilize ECOSE® Technology, which contains an average of 76.98 percent recycled content.

Support for Electric Vehicles

The Project would include the installation of electric vehicle supply equipment (EVSE) pursuant to Section 5.106.5.3, Electric Vehicle Charging of the CALGreen Code. To comply with requirements of Section 5.106.5.3, six percent of the parking spaces for the Costco store and the Project's other commercial land uses would be prewired during construction to accommodate EVSE. In addition, the City is requiring as a condition of approval that Costco install 10 EV charging stations to be operational at the opening of the store in 2020. These stations will support the future use of electric and hybrid-electric vehicles by employees and visitors traveling to and from the site, and would reduce the Project's consumption of gasoline and diesel. Use of EVs will increase overall demand for electricity from the utility (i.e., PG&E), but as the carbon content of the utility's electricity is reduced over time to meet the State's Renewables Portfolio Standard, the GHG emissions associated with EV travel will be reduced accordingly.

[56] Costco Wholesale Corporation, 2019. Sustainability – Buildings. Available: https://www.costco.com/sustainability-buildings.html. Accessed: April 2019.

Waste Recycling and Organics Diversion

Worldwide, Costco is committed to local recycling programs that divert waste materials produced by their business operations from landfills. Costco's 2018 Global Sustainability Waste Report[57] indicates that across all U.S. operations, 73 percent of solid waste was diverted from landfill in 2018, including their waste-to-energy stream. Costco is committed to expanding these programs through partnerships, efficiencies and technologies.

Costco locations worldwide donate edible food products to food banks and to other nonprofits in their local communities. Donation programs vary by location and by country, including the current Feeding America in the U.S., which works with local food banks to provide meals to the hungry. In fiscal year 2018, Costco donated more than 34.7 million pounds of edible food products in all states where it operates, which represents approximately 29 million meals to people in need.

Much of Costco's organic waste (inedible food waste) is recycled into usable products, such as organic fertilizer, compost, animal feed, biofuels and electricity. In the U.S. for fiscal year 2018, Costco diverted over 80.5 million pounds of material from landfills, including:

- 8.7 million pounds of organic waste was converted into animal feed for cattle and hogs;
- 7.3 million pounds of chicken grease produced from rotisserie chickens was recycled, the majority of which was converted into biofuel;
- 853,119 pounds of organic waste was converted into certified organic liquid fertilizer, and in turn was purchased by some of Costco's produce suppliers for use on the products they sell to Costco; and
- additional organic waste from operations was also converted into certified organic liquid fertilizer in the form of a produce that is now sold at Costco locations.

Each store operator uses a combination of the four methods described above depending on local availability and vendor participation.[58]

Water Management

Costco is committed to comprehensive water management at all of its U.S. stores that include water metering systems that detect leaks and benchmark performance, and systems that detect in real-time mechanical failures that can be resolved quickly, and can track operational water waste to allow more efficient water use and/or reduced water usage.[59] Outdoors, native and drought-resistant landscaping materials, along with drip irrigation systems, are used to minimize irrigation. As of the

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57 Costco Wholesale Corporation, 2018. 2018 Global Sustainability Waste Report. Available at: https://www.costco.com/wcsstore/CostcoUSBCCatalogAssetStore/feature-pages/2018-Global-Sustainability-Waste-Report.pdf. Accessed: April 8, 2019.

58 Email correspondence, March 29, 2019, between City of Pleasanton and Jenifer Murillo, Director of Real Estate Development, Costco Wholesale.

59 Email correspondence, March 29, 2019, between City of Pleasanton and Jenifer Murillo, Director of Real Estate Development, Costco Wholesale.

end of fiscal year 2018, the rollout in North America was 95 percent complete and Costco reports a 10 percent water savings since July 2017.

Shipping Efficiencies

Costco continually evaluates its processes and implements ways to improve shipping efficiencies.[60] These measures include packaging design changes and pallet configuration – resulting in more products on a pallet and fewer delivery trucks on the road. The Costco transportation team looks for ways to reduce empty miles involving trucks returning to the depots (distribution centers) from the warehouses, including picking up truckloads of merchandise that are destined for a Costco depot for distribution to a regional group of warehouses, and loading trailers with returned goods that are headed to salvagers or need to be returned to the supplier, and consolidating those shipments into truckloads. These streamlined "reverse logistics processes" help reduce truck miles traveled and the costs associated with merchandise handling and store operation.

[60] Email correspondence, March 29, 2019, between City of Pleasanton and Jenifer Murillo, Director of Real Estate Development, Costco Wholesale.

Chapter 4
Significance Criteria

4.1 CEQA Guidelines

As described in *Section 3.7.3 Regulatory Setting*, in 2009 and 2018, the California Natural Resources Agency adopted amendments to the State CEQA Guidelines addressing the analysis and mitigation of GHG emissions. As a result of the amendments, the Appendix G of the *CEQA Guidelines* provides screening questions to assist lead agencies when assessing a project's potential impacts with regard to GHG emissions as follows:

Would the Project:

a. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?; or

b. Conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?

Amendments to Section 15064.4 of the State CEQA Guidelines were adopted to assist lead agencies in determining the significance of the impacts of GHG emissions. Consistent with existing CEQA practice, Section 15064.4 gives lead agencies the discretion to determine whether to assess those emissions quantitatively or qualitatively. If a qualitative analysis is used, in addition to quantification, this section recommends certain qualitative factors that may be used in the determination of significance (i.e., extent to which the project may increase or reduce GHG emissions compared to the existing setting; whether the project emissions exceed an applicable significance threshold; and extent to which the project complies with regulations or requirements adopted to implement a reduction or mitigation of GHGs). The CEQA Guidelines, as amended, do not establish a threshold of significance; rather, lead agencies are granted discretion to establish significance thresholds for their respective jurisdictions, including looking to thresholds developed by other public agencies, or suggested by other experts, such as CAPCOA or a local air quality district, so long as any threshold chosen is supported by substantial evidence (see Section 15064.7(c)). Consistent with CEQA Guidelines Section 15064.7(c) (use of another agency's significance threshold that is supported by substantial evidence), Appendix G of the CEQA Guidelines states that, where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make a significance determination.

The California Natural Resources Agency has also clarified that the State CEQA Guidelines focus on the effects of GHG emissions as cumulative impacts, and that they should be analyzed in the context of CEQA's requirements for cumulative impact analysis (see Section 15064(h)(3)).[61]

Per State CEQA Guidelines Section 15064(h)(3), a project's incremental contribution to a cumulative impact can be found not cumulatively considerable if the project would comply with an approved plan or mitigation program that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area of the project.[62] To qualify, such a plan or program must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency.[63] Examples of such programs include a "water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plan, [and] plans or regulations for the reduction of greenhouse gas emissions."[64]

4.2 Relevant Court Cases

Center for Biological Diversity v. California Department of Fish and Wildlife

The California Supreme Court considered the CEQA issue of determining the significance of GHG emissions in its *Center for Biological Diversity v. California Department of Fish and Wildlife* decision (62 Cal.4th 204), commonly referred to as the "Newhall Ranch" ruling, based on the project reviewed in the EIR in question. The Court questioned a then-common CEQA approach to GHG analyses for development projects that compares project emissions to the reductions from "business as usual" (BAU) that would be needed statewide to reduce emissions to 1990 levels by 2020, as required by AB 32. The court upheld the BAU method as valid in theory, but concluded that the BAU method was improperly applied in the case of the Newhall project because the target for the project was incorrectly deemed consistent with the statewide emission target of 29 percent below BAU for the year 2020 without explanation as to how that statewide target applied to the project being analyzed. In other words, the court said that the percentage below BAU target developed by the AB 32 Scoping Plan is intended as a measure of the GHG reduction effort required by the State as a whole, and it cannot necessarily be applied to the impacts of a specific project in a specific location. The Court provided some guidance to evaluating the cumulative significance of a proposed land use project's GHG emissions, but noted that none of the approaches could be guaranteed to satisfy CEQA for a particular project. The Court's suggested "pathways to compliance" include:

1. Use a geographically specific GHG emission reduction plan (e.g., a local climate action plan) that outlines how the jurisdiction will reduce emissions consistent with State reduction

61 See generally California Natural Resources Agency, Final Statement of Reasons for Regulatory Action, December 2009, pages 11-13, 14, 16. Available at: http://resources.ca.gov/ceqa/docs/Final_Statement_of_Reasons.pdf . Accessed: March 18, 2019.
62 California Code of Regulations (CCR), Title 14, Section 15064(h)(3).
63 *Ibid*.
64 *Ibid*.

targets, to provide the basis for streamlining project-level CEQA analysis, as described in CEQA § 15183.5.

2. Utilize the Scoping Plan's business-as-usual (no-action-taken) reduction goal, but provide substantial evidence to bridge the gap between the statewide goal and the project's emissions reductions.
3. Assess consistency with AB 32's goal in whole or part by looking to compliance with regulatory programs designed to reduce GHG emissions from particular activities; as an example, the Court points out that projects consistent with an SB 375 Sustainable Communities Strategy (SCS) may need to re-evaluate GHG emissions from cars and light trucks.
4. Rely on existing numerical thresholds of significance for GHG emissions, such as those developed by an air district.

Number four is the most straightforward approach to analysis, since it relies on a "bright-line" project threshold typically based on total annual GHG emissions, or an efficiency metric threshold typically based on total annual GHG emissions per service population. The BAAQMD has developed Project significance thresholds for GHG emissions; however, as described in the next section, the BAQQMD's numerical thresholds have not been updated to align with the SB 32 target for 2030 .

The Court did not list the above pathways in order of importance or intentional sequence, nor require that they be relied upon in an analysis. However, this report considers the potential GHG emissions associated with the Project within the context of the Court's suggested pathways to compliance.

Golden Door v. County of San Diego

In *Golden Door Properties v County of San Diego* (2018). California's Fourth District Court of Appeal affirmed a trial court judgement that invalidated a document adopted by the County of San Diego that was intended as guidance for CEQA review of GHG impacts. The County's GHG guidance document included recommended guidelines for determining significance based on an efficiency metric of 4.9 metric tons of carbon dioxide equivalent per service population. The guidance stated that the efficiency metric represented the county's "fair share" of statewide emissions mandates.

The Court found that the threshold of significance provided by the efficiency metric was not supported by substantial evidence, because it was based on statewide standards with no explanation why those standards were sufficient for use in the county. Specifically, the court held that the county needed to support the efficiency metric with substantial evidence establishing a relationship between the statewide data used to establish the metric and the county-specific reduction targets. Additionally, the Court found that the county's guidance did not sufficiently explain how the efficiency metric would be appropriate across all project types.

The Court also found that the metric violated CEQA because the county failed to formally adopt the GHG guidelines by ordinance, rule, resolution or regulation through a public review process.

Cleveland National Forest v. San Diego Association of Governments

As discussed previously in the Regulatory Setting section, in the Supreme Court ruling in *Cleveland National Forest v. San Diego Association of Governments* (2017) the Court ruled that SANDAG was not required to use the Executive Order's 2050 goal as a significance threshold for GHG impacts because: (1) it is not an "adopted" target within the meaning of CEQA Guidelines section 15064.4(b)(2); (2) the Executive Order does not specify any plan or implementation measures to achieve its goal; and (3) there is no regulatory guidance on how the Executive Order's goal.

4.3 Existing BAAQMD Significance Thresholds

As described in Chapter 2 *Applicable Regulations*, the BAAQMD's CEQA Air Quality Guidelines establish three potential thresholds for analyzing the GHG emissions associated with land use development projects:

- Compliance with a qualified Climate Action Plan, with a goal consistent with AB 32,
- A mass emissions threshold of 1,100 MT of CO_2e per year, or
- A GHG efficiency threshold of 4.6 MT of CO_2e per service population (project jobs + project residents).

The Project would not be built out until 2031. AB 32 has a GHG reduction target of achieving 1990 levels by the year 2020, while SB 32 extends the statewide target to a reduction of 40 percent below 1990 levels by 2030, which is one year prior to Project buildout. For this reason, the SB 32 reduction target applies to the Project. The Association of Environmental Professionals (AEP) Climate Change Committee recommended in a 2015 white paper that CEQA analyses for multiple-phase projects with post-2020 development not only "consider consistency with the 2020/AB 32-based framework but also analyze the consequences of post-2020 GHG emissions in terms of their impacts on the reduction trajectory from 2020 toward 2050."[65] AEP further recommends that the "significance determination should be based on consistency with substantial progress along a post-2020 trajectory." The AEP white paper is advisory only and is not binding guidance or an adopted set of CEQA thresholds. Given that year 2031 is the horizon year for the full buildout of the Project, a post-2020 analysis is warranted.

As noted above in Section 2.4, the Pleasanton CAP is considered qualified through the year 2020. Because full Project buildout would not occur until 2031, the first BAAQMD threshold noted above—compliance with a qualified Climate Action Plan—should only be applied using a CAP that is qualified to be consistent with SB 32's target for 2030. Accordingly, compliance or consistency with the City of Pleasanton CAP in its current state does not represent a sufficient, stand-alone threshold for analyzing the GHG impacts of the Project because it is not qualified out to 2030.

[65] Association of Environmental Professionals, 2015. Beyond 2020: The Challenge of Greenhouse Gas Reduction Planning by Local Governments in California. March 16. Draft whitepaper. Prepared by Climate Change Committee. Available at https://www.califaep.org/images/climatechange/AEP_White_Paper_Beyond_2020.pdf. Accessed March 2019.

The BAAQMD mass emissions threshold of 1,100 MT of CO_2e per year was designed for the District to meet the AB 32 goal of reducing GHG emissions to 1990 levels by 2020 by accounting for the Bay Area's share of GHG emissions reduction beyond that achievable at the state level. It is based on the AB 32 GHG reduction goals and a "gap analysis" that attributes an appropriate share of GHG emissions reductions to new land use development projects in BAAQMD's jurisdiction. However, the District has not yet developed a corresponding mass emissions threshold that is aligned with the SB 32 target for 2030. Accordingly, BAAQMD's existing mass emissions threshold is not appropriate for analyzing the GHG impacts of the Project.

Similarly, the BAAQMD efficiency threshold (4.6 MT of CO_2e per service population) was calculated by dividing the AB 32 GHG reduction target for land use development emissions in California by the estimated 2020 population and employment level. The BAAQMD efficiency threshold is tied directly to AB 32 and statewide emissions reduction goals for 2020. It is generally appropriate to use for larger projects that have a sizable number of residential and/or employees that is representative of the service population generating emissions. However, similar to the City's CAP, this threshold does not address the statewide emissions target mandated by SB 32 for 2030. Furthermore, its service population basis as defined by BAAQMD penalizes retail projects, like the Johnson Drive Economic Development Zone, which are located in close proximity to existing residential development, but do not include those residents in the service population metric. Customers of retail projects generate trips (and related emissions) that must be included in a project's emissions inventory, but the customers themselves are not counted in the service population denominator. In addition, it should be noted that pursuant to *Golden Door Properties v County of San Diego* (2018), use of the efficiency threshold would require BAAQMD to provide substantial evidence establishing a relationship between the statewide data used to derive the 4.6 MT per person threshold and the threshold's applicability to the San Francisco Bay Area and to various types of projects.

For these reasons, BAAQMD's existing efficiency threshold is not appropriate for analyzing the GHG impacts of the Project.

4.4 Project Significance Criteria

Although GHG emissions can be quantified as discussed under the Methodology section above, CARB, BAAQMD, and the City have not adopted quantitative project-level significance thresholds for GHG emissions that would be applicable to the Project. Given that there is no applicable or available quantitative threshold, and given the absence of a qualified GHG reduction plan, the significance of the Project's GHG emissions is evaluated consistent with CEQA Guidelines Section 15064.4(b) by considering whether the Project complies with applicable plans, policies, regulations and requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. CARB's 2017 Scoping Plan Update is intended to reduce GHG emissions to meet the statewide targets set forth in SB 32. ABAG/MTC's Plan Bay Area 2040 is designed to achieve regional GHG reductions from the land use and transportation sectors as required by SB 375 and the state's long-term climate goals. The City of Pleasanton Climate Action Plan is designed to reduce local GHG emissions to support the statewide target for 2020 set forth in AB 32, and to put the City on an emissions trajectory that is consistent with the State's

longer term targets. Thus, the City as Lead Agency has determined that the Project would not have a significant effect on the environment if the Project is found to be consistent with the applicable regulatory plans and policies to reduce GHG emissions, including the emissions reduction measures discussed within the 2017 Climate Change Scoping Plan Update, Plan Bay Area 2040, and the City's Climate Action Plan.

Chapter 5
Project Impacts

5.1 GHG Emissions Impact

Threshold a: Would the Project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

Threshold b: Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

Project Emissions

The California Natural Resources Agency's Final Statement of Reasons for Regulatory Action for the Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB 97 ("Final Statement of Reasons") provides that project-level quantification of emissions should be conducted where it would assist in determining the significance of emissions, even where no numeric threshold applies. In such cases, the Final Statement of Reasons provides that qualitative thresholds can be utilized to determine the ultimate significance of project-level impacts based on a project's consistency with plans, which can include applicable regional transportation plans. Even when using a qualitative threshold, quantification can inform "the qualitative factors" and indicate "whether emissions reductions are possible, and, if so, from which sources."[66] Therefore, the Project's GHG emissions for construction and operation are presented below.

Construction Emissions

GHG emissions associated with construction of the Project were calculated for each year of construction activity using CalEEMod. Results of the GHG emissions calculations are presented on **Table 5**, *Estimated Construction Greenhouse Gas Emissions*. It should be noted that the GHG emissions shown in Table 8 are based on construction equipment operating continuously throughout each workday. In reality, construction equipment tends to operate periodically or cyclically throughout each workday. Therefore, the GHG emissions shown reflect a conservative estimate.

Although GHGs are generated during construction and are accordingly considered 1-time emissions, it is important to include them when assessing all of the long-term GHG emissions associated with a project. Construction-related GHG emissions are amortized over the project's 30-year lifetime in order to include these emissions as part of a project's annualized lifetime total

66 California Natural Resources Agency, 2009. Final Statement of Reasons for Regulatory Action for the Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB 97 (December 2009). pp. 20-26.

emissions, so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies. Due to the potential persistence of GHGs in the environment, construction-period impacts are not assessed independently of operational-period impacts, which are discussed in the next section.

TABLE 5
ESTIMATED UNMITIGATED CONSTRUCTION GREENHOUSE GAS EMISSIONS

Construction Year	CO_2e (Metric Tons) [a, b]
Phase 1 (2020/2021)	1,264
Phase 1 Amortized Emissions (30-years)	**42**
Phase 2 (2030/2031)	799
Project Construction Total	**2,062**
Total Construction Amortized Emissions (30-years)	**69**

NOTES:
[a] Totals may not add up exactly due to rounding in the modeling calculations.
[b] CO_2e emissions are calculated using the global warming potential values from the Intergovernmental Panel on Climate Change Fourth Assessment Report: 25 for CH_4 and 298 for N_2O (Intergovernmental Panel on Climate Change, Fourth Assessment Report: The Physical Science Basis, Summary for Policy Makers, (2007))

SOURCE: ESA, 2019

Operational Emissions

GHG emissions associated with operation of the Project were calculated to disclose operational emissions from the Project. Annual operational GHG emissions were estimated using CalEEMod. CalEEMod incorporates the efficiencies from complying with California's Title 24 Building Energy Efficiency Standards.

Maximum annual net GHG emissions resulting from non-delivery and delivery vehicles, energy (i.e., electricity, natural gas), water conveyance and wastewater treatment, solid waste, emergency generators, and TRUs were calculated for Phase 1 operations (2021) and Full Buildout operations (2031). GHG emissions from operation of the Project at completion of Phase I and at Full Buildout are shown in **Table 6**, *Annual Operational Greenhouse Gas Emissions*.

TABLE 6
ANNUAL OPERATIONAL GHG EMISSIONS, PHASE 1 AND FULL BUILDOUT

	Annual CO_2e Emissions (MT CO_2e per year)	
Emission Source	**Phase 1 2021**	**Full Buildout 2031**
Area	<1	<1
Electricity	677	844
Natural Gas	247	263
Non-Delivery Vehicles (Running)	9,324	11,141
Light-Duty Vehicles (Idling at Gas Station)	377	287

Emission Source	Annual CO_2e Emissions (MT CO_2e per year)	
	Phase 1 2021	**Full Buildout 2031**
Delivery Vehicles (Running)	687	1,725
Delivery Vehicles (Idling)	31	119
TRUs	213	807
Costco Generator	26	26
Hotel Generator	26	26
Solid Waste	392	489
Water and Wastewater	22	53
Construction (amortized over 30 years)	42	69
Total Operational Project GHG Emissions Including Construction Emissions	**12,065**	**15,850**
Estimated Reductions from EV Charging Infrastructure [a]	-136	-92
Estimated Reductions from Costco Solar PV installation [b]	-150	-141
Total Net Operational Project GHG Emissions Including EV and Solar PV Reduction	**11,778**	**15,617**

NOTES:

Categories defined as follows:

Area = Emissions from landscaping equipment. Emissions were modeled using CalEEMod.

Electricity = Emissions from electricity consumption in buildings. Emissions were modeled using CalEEMod.

Natural Gas = Emissions from natural gas combustion for space heating and cooking. Emissions were modeled using CalEEMod.

Non-Delivery vehicles (running) = Operating emissions from daily commercial non-delivery vehicle trips. Emissions from these trips were estimated using CalEEMod.

Light-duty vehicles (idling at gas station) = Idling emissions from autos queueing in line at gas station. Emissions were estimated outside of CalEEMod using EMFAC2017 emissions factors and an idling time of 10 minutes.

Delivery Vehicles (Running) = Operating emissions from daily commercial delivery vehicle trips. Emissions were estimated outside of CalEEMod using emission factors from EMFAC2017.

Delivery Vehicles (Idling) = Operating emissions from daily commercial delivery vehicles idling. Emissions were estimated outside of CalEEMod using emission factors from EMFAC2017 and an idling duration of 15 minutes.

Transportation Refrigeration Units (TRUs) = Operating emissions from daily TRU usage at commercial land uses. Emissions were estimated outside of CalEEMod using emission factors from the National Renewable Energy Laboratory.

Costco and Hotel Generators = Operating emissions from diesel-powered emergency generators. Emission were estimated outside of CalEEMod using emission factors from The Climate Registry.

Solid Waste = Downstream fugitive methane emissions associated with landfilling solid waste. Emissions were modeled using CalEEMod.

[a] This represents the reduction in emissions from conventional fossil-fueled vehicles that would be replaced by EVs using the charging infrastructure at the Project site. See Appendix A for calculation details.

[b] This represents the reduction in emissions from a rooftop solar PV system at the Costco warehouse that would generate 1,128 MWh of clean energy annually.

Total operational emissions, including amortized construction emissions, are estimated to be 12,065 MT CO_2e in 2021 (Phase 1) and 15,850 MT CO_2e in 2031 (full buildout). With emission reductions anticipated through the use of the 10 EV charging stations at the Costco warehouse, and the installation of a 1,128 MWh rooftop solar PV system at the Costco warehouse, net total operational emissions are estimated to be 11,778 MT CO_2e in 2021 (Phase 1) and 15,617 MT CO_2e in 2031 (full buildout).

As stated above, this quantitative analysis is provided for informational purposes and is not presented as the method to analyze GHG impacts or to demonstrate compliance with a quantitative threshold. Instead, the analysis is presented to quantify the Project's potential GHG emissions in order to inform the qualitative analysis. These figures can be used to determine whether emissions reductions are possible, and, if so, from which sources, as well as to demonstrate consistency with certain GHG reduction plans and policies.

Consistency with Plans

A significant impact would occur if the Project would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment by conflicting with state goals and applicable regulatory plans and policies to reduce GHG emissions including AB 32, SB 32, Executive Order S-3-05 and CARB's 2017 Climate Change Scoping Plan Update, as well as the region's Sustainable Communities Strategy/Regional Transportation Plan (Plan Bay Area 2040) and the City's Climate Action Plan.

State Goals and CARB's Climate Change Scoping Plan

The primary goal of AB 32 is the requirement for statewide GHG emissions to be reduced to 1990 levels by 2020. AB 32 also required the adoption of discrete Early Action Measures Items[67] which resulted in the development of the Low Carbon Fuel Standard, among other things. Further, AB 32 required the development of the first Scoping Plan (2008) for achieving the necessary GHG reductions in a technologically and economically feasible manner, the adoption of a mandatory GHG emissions reporting regulation, and the establishment of a market-based declining emission limit program (i.e., the cap-and-trade program). The First Update to the Scoping Plan was approved by CARB in May 2014 and built upon the initial Scoping Plan with new strategies and recommendations to achieve the AB 32 target.

Executive Order B-30-15 established a GHG emission reduction goal for California of 40 percent below 1990 levels by 2030. This Executive Order also directed all state agencies with jurisdiction over GHG-emitting sources to implement measures designed to achieve the new interim 2030 goal, as well as the pre-existing, long-term 2050 goal identified in Executive Order S-3-05. Additionally, the Executive Order directed CARB to update its Scoping Plan to address the 2030 goal, which it has done with the 2017 Scoping Plan Update. SB 32 codifies the 2030 emissions reduction goal of Executive Order B-30-15 requiring CARB to ensure that statewide GHG emissions are reduced to 40 percent below 1990 levels by 2030.

The Project would be consistent with key state plans and regulatory requirements referenced in the 2017 Scoping Plan Update designed to reduce statewide emissions. According to the 2017 Scoping Plan Update, reductions needed to achieve the 2030 target are expected to be achieved by increasing the RPS to 50 percent of the State's electricity by 2030, greatly increasing the fuel economy of vehicles and the number of zero-emission or hybrid vehicles, reducing the rate of growth in VMT, supporting high speed rail and other alternative transportation options, and increasing the use of

[67] CARB. 2007. Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California Recommended for Board Consideration. Available online at: https://www.arb.ca.gov/cc/ccea/meetings/ea_final_report.pdf

high efficiency appliances, water heaters, and HVAC systems. As discussed previously, the Governor has already signed into law SB 350 (Chapter 547, Statues of 2015), which increased the Renewables Portfolio Standard to 50 percent by 2030 and included interim targets of 40 percent by 2024 and 45 percent by 2027. With the passage of SB 100, California's Renewables Portfolio Standard was further increased and requires retail sellers and local publicly-owned electric utilities to procure eligible renewable electricity for 44 percent of retail sales by the end of 2024, 52 percent by the end of 2027, and 60 percent by the end of 2030; and requires that CARB should plan for 100 percent eligible renewable energy resources and zero-carbon resources by the end of 2045, which would reduce Project electricity-related emissions.

The Project would support or not impede implementation of these potential reduction strategies identified by CARB, and it would benefit from statewide and utility-provider efforts towards increasing the portion of electricity provided from renewable resources. The Project would also benefit from statewide efforts towards increasing the fuel economy standards of vehicles and reducing the carbon content of fuels. The Project would utilize energy efficiency appliances and equipment, as required by Title 24, and it would provide electric vehicle charging stations to support the future use of electric and hybrid-electric vehicles by employees and visitors traveling to and from the site. For these reasons, the Project's post-2020 emissions trajectory is expected to follow a declining trend, consistent with the 2017 Scoping Plan Update, and the Project would not conflict with or obstruct implementation of the 2017 Scoping Plan Update.

Executive Order S-3-05

Executive Order No. S-3-05 established a goal of reducing the State's GHG emissions to 80 percent below the 1990 level by the year 2050. This goal has not been codified by the Legislature and CARB has not adopted a strategy or regulations designed to meet the 2050 goal. However, studies have shown that, in order to meet the 2050 goal, aggressive technologies in the transportation and energy sectors, including electrification and the decarbonization of fuel, will be required. In its original *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."[68] In the First Update, 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."[69] The 2017 Scoping Plan recognizes that additional work is needed to achieve the more stringent 2050 target: "While the Scoping Plan charts the path to achieving the 2030 GHG emissions reduction target, we also need momentum to propel us to the 2050 statewide GHG target (80 percent below 1990 levels). In developing this Scoping Plan, we considered what policies are needed to meet our mid-term and long-term goals."[70] For example, the 2017 Scoping Plan acknowledges that "though Zero Net Carbon Buildings are not

68 California Air Resources Board, 2008. *Climate Change Scoping Plan*. December. Page 117. Available at: https://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf. Accessed May 2019.

69 California Air Resources Board, 2014. *First Update to the Change Scoping Plan*. May. Page 32. Available at: https://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf. Accessed May 2019.

70 California Air Resources Board, 2017. *California's 2017 Climate Change Scoping Plan*. November. Available at: https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf. Accessed May 2019.

feasible at this time and more work needs to be done in this area, they will be necessary to achieve the 2050 target. To that end, work must begin now to review and evaluate research in this area, establish a planning horizon for targets, and identify implementation mechanisms."[71]

In developing the 2017 Scoping Plan Update, CARB, CEC, CPUC, and the California Independent System Operator (CAISO) commissioned a study to evaluate the feasibility and cost of meeting the 2030 target along the way to reaching the State's goal of reducing GHG emissions to 80 percent below 1990 levels by 2050. With input from the agencies, the California State Agencies' PATHWAYS Project explores scenarios for meeting the State's long term GHG emissions targets, encompassing the entirety of California economy with detailed representations of the buildings, industry, transportation, and electricity sectors.[72] While acknowledging the inherent uncertainty associated with its modeling assumptions, the PATHWAYS study emphasizes the need for significant action and continued policy development by the State to support low-carbon technologies and markets for energy efficiency, building electrification, renewable electricity, zero emission vehicles, and renewable liquid fuels. The study underscores the need for a periodic review of State policies and programs for reducing GHG emissions, as was anticipated by AB 32 in its directive to update the Scoping Plan at least every five years.

A 2018 update to the PATHWAYS study advances the understanding of what is required for technology deployment and other GHG mitigation strategies if California is to meet its long-term climate goals. To achieve high levels of consumer adoption of zero-carbon technologies, particularly of electric vehicles and energy efficiency and electric heat in buildings, the 2018 study concludes that market transformation is needed to bring down the capital cost and to increase the range of options available. This market transformation can be facilitated by 1) higher carbon prices (which can be created by the state's cap and trade and LCFS programs); 2) codes and standards, regulations and direct incentives, to reduce the upfront cost to the customer; and 3) business and policy innovations to make zero-carbon technology options the cheaper, preferred solution compared to the fossil fueled alternative.[73]

Based on existing emissions trends, the proposed Project's emissions are expected to decline from its full buildout year of 2031 through at least 2050 due to continued regulatory and technological advancements. The extent to which GHG emissions from mobile sources indirectly attributed to the proposed Project would change in the future depends on the quantity (e.g., number of vehicles, average daily mileage) and quality (i.e., carbon content) of fuel that would be available and required to meet both regulatory standards and resident and worker needs. In addition, renewable power requirements, the LCFS, and vehicle emissions standards discussed above will all decrease GHG emissions per unit of energy delivered or per VMT. Due to the technological shifts required and the unknown parameters of the regulatory framework in 2050, further quantitatively analyzing the

71 *Ibid*.

72 Energy + Environmental Economics (E3), 2015. *Summary of the California State Agencies' PATHWAYS Project: Long-term Greenhouse Gas Reduction Scenarios*. Available at: https://www.ethree.com/public_proceedings/summary-california-state-agencies-pathways-project-long-term-greenhouse-gas-reduction-scenarios/. Accessed: March 19, 2019. April 2015

73 Energy + Environmental Economics (E3), 2018. *Deep Decarbonization in a High Renewables Future. Updated Results from the California PATHWAYS Model*. Available at: https://www.ethree.com/wp-content/uploads/2018/06/Deep_Decarbonization_in_a_High_Renewables_Future_CEC-500-2018-012-1.pdf . Accessed March 18, 2019.

proposed Project's impacts relative to the 2050 target would be speculative for purposes of CEQA. Section 15145 of the State CEQA Guidelines directs that "[i]f, after thorough investigation, a Lead Agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact."

While it would be speculative to quantitatively estimate the Project's emissions level in 2050 and to assess the impact to the 2050 horizon-year goal set in EO S-3-05, statewide efforts are underway to facilitate the State's achievement of that goal and it is reasonable to expect the proposed Project's GHG emissions level to decline as the regulatory initiatives identified by CARB in the 2017 Scoping Plan Update are implemented, and other technological innovations occur. Given the reasonably anticipated decline in proposed Project emissions once fully constructed and operational, the Project would not conflict with the 2050 horizon-year goal of EO S-3-05.

Plan Bay Area

Pursuant to California Senate Bill 375, ABAG and the MTC adopted Plan Bay Area to establish targets and strategies intended to meet the region's needs for housing at all income levels, while reducing GHGs associated with private passenger and light duty truck traffic. Plan Bay Area 2040 includes a target to reduce per capita vehicular-related GHGs by at least 19 percent by 2040 compared to 2005 baseline levels. A key strategy for meeting these targets is to facilitate growth in Priority Development Areas and Transit Priority Areas within urbanized centers where there are more mobility options available to reduce driving by cars and light trucks.

Although the proposed Project is not within a PDA as identified in Plan Bay Area, a portion of it is located within a Transit Priority Project area, and the Project is consistent with the City's General Plan land use policies, which are reflected in the Plan Bay Area's growth projections for the area. Moreover, the Project will further reduce GHG emissions from passenger vehicles and light-duty trucks by providing electrical charging stations at the commercial parking lot, per the requirements of CALGreen and the City conditions of approval. Consequently, the proposed Project would not conflict with or obstruct implementation of Plan Bay Area.

City of Pleasanton Climate Action Plan

The City's CAP is a roadmap for the City to achieve its 2020 GHG reduction goal of 15 percent below 2005 levels. The CAP includes GHG reduction measures grouped under five broad strategies for transportation, energy use, solid waste, water and wastewater, and community engagement. Since the CAP was developed as a plan to achieve the City's 2020 target, its applicability to the Project is limited since the Project will not become operational until 2021 and won't be fully built out until 2031. However, the measures and policies in the CAP will remain relevant after 2020. Thus it is appropriate to qualitatively assess the Project's consistency with the CAP.

In general, the Project would comply with applicable City strategies to reduce GHG emissions by implementing energy efficient building designs, reducing indoor and outdoor water demand, and installing energy-efficient appliances and equipment. These measures are consistent with the City's GHG reduction, sustainability, and smart-growth goals of improving energy and water efficiency

in buildings, decreasing per-capita water use, using energy efficient appliances and equipment, and creating a more livable city.

Table 7, *Project Consistency with City of Pleasanton Climate Action Plan*, contains a list of the CAP's GHG-reducing strategies and actions applicable to the Project. The Project-level analysis describes the consistency of the Project with these goals, strategies and actions. As shown in the Table, the Project would be consistent with the City's CAP and would support or not impede implementation of the GHG reduction strategies identified in the CAP.

TABLE 7
PROJECT CONSISTENCY WITH CITY OF PLEASANTON CLIMATE ACTION PLAN

Action	Description	Consistency Analysis
Land Use and Transportation Strategies		
LU1	Support Infill and higher density development	**Consistent** – Objective #2 of the Project is to "maximize the benefits of the location of the EDZ area as an infill site located along transportation corridors and near transit by encouraging the development of both locally and regionally accessible uses in the EDZ area" (see Draft SEIR Chapter 3, Project Description).
LU2	Support mixed-use infill and new development near local-serving commercial areas	**Consistent** –The Project would include re-zoning of parcels within the EDZ area to allow a mix of uses that could include club retail, hotel, recreational, and small- and large-format retail establishments. These uses would be located near existing local-serving commercial areas including light industrial, office, commercial, retail, and institutional uses. Also see LU1 above.
LU3	Improve transportation efficiency through design improvements	**Consistent** – The Project would be consistent with General Plan goals for maintaining and expanding pedestrian and bicycle access. Bicycle lanes will be maintained on Johnson Drive, buffered bicycle lanes would improve bicycle safety along the corridor, and Johnson Drive would be widened to the west to accommodate a new bike lane. Final design of all improvements along Johnson Drive shall maintain or enhance existing bicycles, transit, and pedestrian facilities (see Draft SEIR Chapter 4.D Transportation and Traffic). Also see LU1 and LU2 above and NM1 below.
NM1	Create and maintain a safe, convenient, and effective system for pedestrians and bicyclists	**Consistent** –The Project would be consistent with General Plan goals for maintaining and expanding pedestrian and bicycle access. Bicycle access to and around the EDZ area is provided by the Class I Alamo Canal and bicycle lanes on Johnson Drive. Per the EDZ Design Guidelines, bicycle lanes will be maintained on Johnson Drive, and buffered bicycle lanes would improve bicycle safety along the corridor. In addition, Johnson Drive would be widened to the west to accommodate a new bike lane. Finally, Draft SEIR Mitigation Measure 4.D-3 requires that "final design of all improvements along Johnson Drive shall maintain or enhance existing bicycles, transit, and pedestrian facilities, and shall ensure bicycle and pedestrian facilities and access to

Action	Description	Consistency Analysis
		the Alamo Canal Trail at the signalized crossing at Commerce Circle and any other signalized locations on Johnson Drive." (see Draft SEIR Chapter 4.D Transportation and Traffic).
TR1	Improve and increase transit ridership with incentives, partnerships, and related investments	**Consistent** – The Project would generate transit ridership and would be required to comply with existing General Plan provisions that encourage the use of alternative modes of transportation (see Draft SEIR Chapter 4.D Transportation and Traffic).
TDM1	Use parking pricing/policy to discourage single occupancy vehicle (SOV) travel	**NA** – this strategy is implemented by the City
TDM2	Promote alternatives to work and school commutes	**NA** – this strategy is implemented by the City
TDM3	Improve traffic flow to relieve congestion	**NA** – this strategy is implemented by the City
VE1	Develop a supportive community infrastructure for alternative fuel vehicles	**Consistent** – The Project is providing EV charging stations
VE2	Develop a city fleet replacement program	**NA** – this strategy is implemented by the City
Energy		
EC1	Use city codes, ordinances, and permitting to enhance green building, energy efficiency, and energy conservation.	**Consistent** – The Project will conform to the 2019 Title 24 Standard, which according to the CEC is expected to be 30 percent more energy efficient than the 2016 code. The Project must also conform to the City's 2006 green building ordinance, which requires commercial buildings of more than 20,000 square feet to incorporate green features consistent with a LEED rating. According to Costco's web site, Costco's warehouse designs are consistent with the requirements of LEED.[74]
EC2	Leverage state and local programs to increase energy efficiency and conservation	**NA** – this strategy is aimed at improving energy efficiency of existing buildings
EC3	Establish and promote financing and financial incentive programs to support energy efficiency and conservation.	**NA** – this strategy is implemented by the City
EC4	Develop programs to increase energy efficiency and conservation.	**NA** – this strategy is implemented by the City
EG1	Promote green building and energy efficient development for government operations and city infrastructure.	**NA** – this strategy is implemented by the City
ER1	Implement local ordinances and permitting processes to support renewable energy.	**NA** – this strategy is implemented by the City
ER2	Develop programs to promote on-site renewable energy to the community.	**Consistent** – As described in Project Design Features, the Costco warehouse will install rooftop solar PV to supply renewable electricity to the building. As described in Project Design Features, the Phase 1 hotel and retail buildings would also be required to install rooftop solar PV, and all Phase 2 uses would be required to install rooftop solar PV, pending specific building and roof characteristics and the feasibility of PV installations during the time of construction and development.

[74] Costco Wholesale Corporation, 2019. Sustainability – Buildings. Available: https://www.costco.com/sustainability-buildings.html. Accessed: April 2019.

Action	Description	Consistency Analysis
ER3	Promote use of renewable energy for municipal operations.	**NA** – this strategy is implemented by the City
Solid Waste		
SW1	Increase recycling, organics diversion, and waste reduction associated with municipal operations.	**NA** – this strategy is implemented by the City
SW2	Increase recycling, organics diversion, and waste reduction associated with the entire community.	**Consistent** – The Project will participate in the City's waste hauling and diversion programs, and be required to provide adequate onsite collection service for recyclables and compostable materials (organics), as required by state law and county ordinance.
Water and Wastewater		
WA1	Conserve community water through building and landscape design and improvements	**Consistent** – The Project will adhere to CalGreen requirements for indoor and outdoor water conservation.
WA2	Conserve water used by municipal operations through building and landscape design and improvements	**NA** – this strategy is implemented by the City
WA3	Increase or establish use of reclaimed/grey water systems	**NA** – this strategy is implemented by the City
Community Engagement		
PE1	Provide information and resources to the community.	**NA** – this strategy is implemented by the City
PE2	Partner with schools to promote sustainability efforts.	**NA** – this strategy is implemented by the City
PE3	Implement outreach programs for local businesses and residents.	**NA** – this strategy is implemented by the City

SOURCE: City of Pleasanton Climate Action Plan, 2011; ESA, 2019

5.2 Conclusion

As set forth above, the Project would make an incremental contribution to climate change by resulting in new GHG emissions compared to existing conditions.[75] However, even a very large individual project would not generate enough GHG emissions on its own to significantly influence global climate change, given the worldwide scope of GHG emissions. As discussed above, the Project would be consistent with the 2017 Climate Change Scoping Plan Update, Plan Bay Area 2040, and the City of Pleasanton Climate Action Plan. The Project's consistency with these applicable plans and policies to reduce GHG emissions, along with implementation of project design features discussed in this Technical Analysis, including the EV charging stations, would minimize the Project's GHG emissions. The Project would be designed to incorporate green building techniques as required by the Title 24 Building Energy standards and would incorporate the sustainability features discussed in Section 3.2.

[75] Consistent with standard environmental analysis, vehicle trips generated by newly developed uses at the Project site (including the Costco store) and the resulting GHG emissions from those trips, are considered net new. In reality, the presence of a new Costco store, for example, is likely to result in some redistribution of customer travel to and from existing Costco stores, meaning that the analysis is conservative and likely overstates both total vehicle miles traveled and also GHG emissions.

As noted above, both the 2017 Scoping Plan Update and the City's Climate Action Plan call for, among other things, distributed power generation; that is, on-site electricity generation from sources such as solar photovoltaic (PV) systems. Accordingly, a rooftop solar PV system would be installed at the Costco warehouse, within two years of the store opening. This project design feature is estimated to generate 1,128 MWh of clean energy annually, reducing GHG emissions by approximately 150 MT CO_2e per year in 2021 and 141 MT CO_2e per year, based on PG&E's expected electricity emission factors in 2021 and 2031, respectively. The 2017 Scoping Plan and the City's Climate Action Plan also call for a more supportive infrastructure for alternatively-fueled vehicles. Accordingly, the Project includes 10 EV charging stations to be operational at the opening of the store in 2020. With implementation of these design features, net total operational emissions are estimated to be 11,778 MT CO_2e in 2021 (Phase 1) and 15,617 MT CO_2e in 2031 (full buildout). In addition, rooftop solar PV systems will be installed on the Phase 1 hotel(s) and retail space and the Phase 2 retail space. The design of these systems is currently not known, so the anticipated energy production and resulting GHG emission reductions were not estimated for these project design features. Collectively, the solar energy generation on the Costco Warehouse and other Project buildings would reduce the Project's GHG emissions below those estimated herein.

Furthermore, in addition to the Project's consistency with applicable GHG reduction strategies, the Project would not conflict with the future anticipated statewide GHG reductions goals. CARB has outlined a number of potential strategies for achieving the 2030 reduction target of 40 percent below 1990 levels. These potential strategies include renewable resources for 60 percent of the State's electricity by 2030, increasing the fuel economy of vehicles and the number of zero-emission or hybrid vehicles, reducing the rate of growth in VMT, supporting high-speed rail and other alternative transportation options, and use of high-efficiency appliances, water heaters, and HVAC systems. The Project would benefit from statewide and utility-provider efforts towards increasing the portion of electricity provided from renewable resources. The Project would also benefit from statewide efforts towards increasing the fuel economy standards of vehicles. The Project would help reduce VMT growth by locating retail development at an infill location close to existing transit (including the Pleasanton BART station) and by locating retail development close to large areas of existing residential development in the City of Pleasanton. This means that nearby residents who are, in particular, Costco shoppers, could travel lesser distances than they currently do.[76]

In Summary, the Project as designed would be generally consistent with actions referenced in state, regional and local plans, policies and regulations designed to reduce GHG emissions. Consequently, the Project would not conflict with applicable plans, policies and regulations adopted for the purpose of reducing the emissions of GHGs, and the impact would be **less than significant**.

[76] While transit accessibility may not result in a substantial decrease in Costco customer vehicle travel, it could result in transit use by store employees and by employees and customers of other retail uses within the Johnson Drive Economic Development Zone.

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Appendix A
Emissions Modeling Files

ESA

APPENDIX A

Construction Emissions

- CalEEMod Output – Construction
- Construction Haul Truck Idling Emissions
- Construction Emissions Summary

Operational Emissions

- CalEEMod Output – Phase 1 (2021)
- CalEEMod Output – Full-Buildout 1 (2031)
- Generator Emissions
- Vehicle Emissions
- Transportation Refrigeration Unit Emissions
- Operations Emissions Summary

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Emissions Calculations
Construction Emissions

CalEEMod Output – Construction

Johnson Drive Construction-Mitigated - Bay Area AQMD Air District, Annual

Johnson Drive Construction-Mitigated

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	3.40	Acre	3.40	148,104.00	0
Other Non-Asphalt Surfaces	1.22	Acre	1.22	53,143.20	0
Other Non-Asphalt Surfaces	2.80	Acre	2.80	121,968.00	0
Parking Lot	10.30	Acre	10.30	448,668.00	0
Parking Lot	3.16	Acre	3.16	137,649.60	0
Parking Lot	10.50	Acre	10.50	457,380.00	0
Hotel	231.00	Room	0.77	132,000.00	0
Discount Club	148.00	1000sqft	3.40	148,000.00	0
Gasoline/Service Station	20.00	Pump	0.06	2,823.50	0
Strip Mall	5.00	1000sqft	0.11	5,000.00	0
Strip Mall	184.04	1000sqft	4.22	184,037.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	4			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project Specific Information

Architectural Coating - Other Non-Asphalt Surfaces would not have architectural coatings

Construction Off-road Equipment Mitigation - Tier 3 Equipment for equipment greater than 50HP

Table Name	Column Name	Default Value	New Value
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tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	235,930.00	75,411.75
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	235,930.00	92,018.50
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	707,791.00	205,500.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	707,791.00	226,235.25
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	707,791.00	276,055.50
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tblLandUse	LandUseSquareFeet	184,040.00	184,037.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	3.00

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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					
2020	1.6078	7.0783	5.2573	0.0128	0.6885	0.2907	0.9792	0.2625	0.2713	0.5338	0.0000	1,143.5509	1,143.5509	0.2216	0.0000	1,149.0905
2021	0.8408	0.5733	0.5744	1.2100e-003	0.0369	0.0277	0.0646	9.6800e-003	0.0261	0.0357	0.0000	106.8633	106.8633	0.0182	0.0000	107.3170
2030	1.3726	1.6899	2.6702	8.6000e-003	0.5892	0.0353	0.6245	0.2266	0.0352	0.2618	0.0000	787.0846	787.0846	0.0305	0.0000	787.8467
2031	0.0110	0.0185	0.0401	7.0000e-005	4.1000e-004	8.3000e-004	1.2300e-003	1.0000e-004	8.3000e-004	9.3000e-004	0.0000	6.4385	6.4385	3.0000e-004	0.0000	6.4460
Maximum	**1.6078**	**7.0783**	**5.2573**	**0.0128**	**0.6885**	**0.2907**	**0.9792**	**0.2625**	**0.2713**	**0.5338**	**0.0000**	**1,143.5509**	**1,143.5509**	**0.2216**	**0.0000**	**1,149.0905**

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					
2020	1.2668	5.2604	5.9854	0.0128	0.6885	0.2137	0.9022	0.2625	0.2135	0.4760	0.0000	1,143.5500	1,143.5500	0.2216	0.0000	1,149.0896
2021	0.8123	0.4857	0.6211	1.2100e-003	0.0369	0.0252	0.0621	9.6800e-003	0.0251	0.0348	0.0000	106.8632	106.8632	0.0182	0.0000	107.3170
2030	1.2498	2.7736	3.3673	8.6000e-003	0.5892	0.1235	0.7126	0.2266	0.1234	0.3500	0.0000	787.0840	787.0840	0.0305	0.0000	787.8461
2031	8.9200e-003	0.0290	0.0437	7.0000e-005	4.1000e-004	1.5300e-003	1.9300e-003	1.0000e-004	1.5300e-003	1.6300e-003	0.0000	6.4385	6.4385	3.0000e-004	0.0000	6.4460
Maximum	**1.2668**	**5.2604**	**5.9854**	**0.0128**	**0.6885**	**0.2137**	**0.9022**	**0.2625**	**0.2135**	**0.4760**	**0.0000**	**1,143.5500**	**1,143.5500**	**0.2216**	**0.0000**	**1,149.0896**

	ROG	NOx	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	**12.90**	**8.67**	**-17.27**	**0.00**	**0.00**	**-2.64**	**-0.56**	**0.00**	**-9.04**	**-3.62**	**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	4-6-2020	7-5-2020	5.5758	4.0474
2	7-6-2020	10-5-2020	2.0782	1.6868
3	10-6-2020	1-5-2021	1.0167	0.7777
4	1-6-2021	4-5-2021	1.3717	1.2631
40	1-6-2030	4-5-2030	0.7216	1.1876
41	4-6-2030	7-5-2030	0.5620	0.7545
42	7-6-2030	10-5-2030	0.4399	0.6260
43	10-6-2030	1-5-2031	1.3596	1.4724
44	1-6-2031	4-5-2031	0.0084	0.0108
		Highest	5.5758	4.0474

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	2.2063	5.0000e-005	5.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0111	0.0111	3.0000e-005	0.0000	0.0118
Energy	0.0363	0.3295	0.2768	1.9800e-003		0.0250	0.0250		0.0250	0.0250	0.0000	1,812.5169	1,812.5169	0.0726	0.0202	1,820.3450
Mobile	4.7853	20.6799	45.0663	0.1278	9.9978	0.1455	10.1433	2.6839	0.1367	2.8207	0.0000	11,721.1523	11,721.1523	0.5290	0.0000	11,734.3768
Waste						0.0000	0.0000		0.0000	0.0000	197.3559	0.0000	197.3559	11.6634	0.0000	488.9410
Water						0.0000	0.0000		0.0000	0.0000	9.8637	65.3491	75.2127	1.0161	0.0245	107.9247
Total	**7.0278**	**21.0094**	**45.3489**	**0.1298**	**9.9978**	**0.1705**	**10.1683**	**2.6839**	**0.1618**	**2.8457**	**207.2196**	**13,599.0293**	**13,806.2489**	**13.2811**	**0.0447**	**14,151.5992**

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	2.2063	5.0000e-005	5.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0111	0.0111	3.0000e-005	0.0000	0.0118
Energy	0.0363	0.3295	0.2768	1.9800e-003		0.0250	0.0250		0.0250	0.0250	0.0000	1,812.5169	1,812.5169	0.0726	0.0202	1,820.3450
Mobile	4.7853	20.6799	45.0663	0.1278	9.9978	0.1455	10.1433	2.6839	0.1367	2.8207	0.0000	11,721.1523	11,721.1523	0.5290	0.0000	11,734.3768
Waste						0.0000	0.0000		0.0000	0.0000	197.3559	0.0000	197.3559	11.6634	0.0000	488.9410
Water						0.0000	0.0000		0.0000	0.0000	9.8637	65.3491	75.2127	1.0161	0.0245	107.9247
Total	**7.0278**	**21.0094**	**45.3489**	**0.1298**	**9.9978**	**0.1705**	**10.1683**	**2.6839**	**0.1618**	**2.8457**	**207.2196**	**13,599.0293**	**13,806.2489**	**13.2811**	**0.0447**	**14,151.5992**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Phase 1A-Grading/Excavation	Grading	4/6/2020	5/10/2020	6	30	
2	Phase 1B-Grading/Excavation	Grading	4/6/2020	6/15/2020	5	51	
3	Phase 1A-Drainage/Utilities/Sub-Grade	Site Preparation	4/22/2020	4/29/2020	6	7	
4	Phase 1A-Foundations/Concrete Pour	Site Preparation	4/29/2020	5/15/2020	6	15	
5	Phase 1A-Building Construction	Building Construction	5/16/2020	7/24/2020	6	60	
6	Phase 1A-Architectural Coatings	Architectural Coating	5/28/2020	7/24/2020	6	50	
7	Phase 1B-Drainage/Utilities/Sub-Grade	Site Preparation	6/16/2020	6/30/2020	5	11	
8	Phase 1B-Foundations/Concrete Pour	Site Preparation	7/1/2020	7/30/2020	5	22	
9	Phase 1A-Paving	Paving	7/17/2020	7/24/2020	6	7	

10	Phase 1B-Building Construction	Building Construction	7/31/2020	2/23/2021	5	148	
11	Phase 1B-Architectural Coatings	Architectural Coating	2/24/2021	3/20/2021	5	18	
12	Phase 1B-Paving	Paving	3/21/2021	4/5/2021	5	11	
13	Phase 2-Demolition	Demolition	1/7/2030	2/3/2030	5	20	
14	Phase 2-Grading/Excavation	Grading	2/4/2030	3/2/2030	5	20	
15	Phase 2-Drainage/Utilities/Sub-Grade	Site Preparation	3/3/2030	4/6/2030	5	25	
16	Phase 2-Foundations/Concrete Pour	Site Preparation	4/6/2030	4/28/2030	5	15	
17	Phase 2-Building Construction	Building Construction	4/30/2030	11/11/2030	5	140	
18	Phase 2-Architectural Coatings	Architectural Coating	11/12/2030	12/9/2030	5	20	
19	Phase 2-Paving	Paving	12/10/2030	1/7/2031	5	21	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 31.38

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 226,235; Non-Residential Outdoor: 75,412; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Phase 1A-Grading/Excavation	Graders	1	8.00	187	0.41
Phase 1A-Grading/Excavation	Rubber Tired Dozers	1	8.00	247	0.40
Phase 1A-Grading/Excavation	Scrapers	6	8.00	367	0.48
Phase 1A-Grading/Excavation	Off-Highway Trucks	1	8.00	402	0.38
Phase 1A-Grading/Excavation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Phase 1A-Drainage/Utilities/Sub-Grade	Dumpers/Tenders	1	8.00	16	0.38
Phase 1A-Drainage/Utilities/Sub-Grade	Off-Highway Tractors	3	8.00	124	0.44
Phase 1A-Drainage/Utilities/Sub-Grade	Off-Highway Trucks	2	8.00	402	0.38
Phase 1A-Drainage/Utilities/Sub-Grade	Rollers	3	8.00	80	0.38
Phase 1A-Drainage/Utilities/Sub-Grade	Skid Steer Loaders	2	8.00	65	0.37
Phase 1A-Foundations/Concrete Pour	Cement and Mortar Mixers	60	8.00	9	0.56
Phase 1A-Foundations/Concrete Pour	Forklifts	3	8.00	89	0.20

Phase 1A-Foundations/Concrete Pour	Generator Sets	1	8.00	84	0.74
Phase 1A-Foundations/Concrete Pour	Pumps	1	8.00	84	0.74
Phase 1A-Building Construction	Graders	2	8.00	187	0.41
Phase 1A-Building Construction	Off-Highway Tractors	10	8.00	124	0.44
Phase 1A-Building Construction	Generator Sets	1	8.00	84	0.74
Phase 1A-Building Construction	Welders	1	8.00	46	0.45
Phase 1A-Architectural Coatings	Air Compressors	1	8.00	78	0.48
Phase 1A-Paving	Off-Highway Tractors	3	8.00	124	0.44
Phase 1A-Paving	Off-Highway Trucks	3	8.00	402	0.38
Phase 1A-Paving	Paving Equipment	2	8.00	132	0.36
Phase 1A-Paving	Rollers	3	8.00	80	0.38
Phase 1A-Paving	Skid Steer Loaders	1	8.00	65	0.37
Phase 1B-Grading/Excavation	Excavators	1	8.00	158	0.38
Phase 1B-Grading/Excavation	Graders	1	8.00	187	0.41
Phase 1B-Grading/Excavation	Rubber Tired Dozers	1	8.00	247	0.40
Phase 1B-Grading/Excavation	Off-Highway Trucks	1	8.00	402	0.38
Phase 1B-Grading/Excavation	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Phase 1B-Drainage/Utilities/Sub-Grade	Rubber Tired Dozers	3	8.00	247	0.40
Phase 1B-Drainage/Utilities/Sub-Grade	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Phase 1B-Foundations/Concrete Pour	Cranes	1	8.00	231	0.29
Phase 1B-Foundations/Concrete Pour	Forklifts	3	8.00	89	0.20
Phase 1B-Foundations/Concrete Pour	Generator Sets	1	8.00	84	0.74
Phase 1B-Foundations/Concrete Pour	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Phase 1B-Foundations/Concrete Pour	Pumps	1	8.00	84	0.74
Phase 1B-Building Construction	Cranes	1	8.00	231	0.29
Phase 1B-Building Construction	Forklifts	4	8.00	89	0.20
Phase 1B-Building Construction	Generator Sets	1	8.00	84	0.74
Phase 1B-Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Phase 1B-Building Construction	Welders	2	8.00	46	0.45
Phase 1B-Architectural Coatings	Air Compressors	1	8.00	78	0.48

Phase 1B-Paving	Pavers	2	8.00	130	0.42
Phase 1B-Paving	Paving Equipment	2	8.00	132	0.36
Phase 1B-Paving	Rollers	2	8.00	80	0.38
Phase 2-Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Phase 2-Demolition	Excavators	2	8.00	158	0.38
Phase 2-Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Phase 2-Grading/Excavation	Excavators	1	8.00	158	0.38
Phase 2-Grading/Excavation	Graders	2	8.00	187	0.41
Phase 2-Grading/Excavation	Rubber Tired Dozers	1	8.00	247	0.40
Phase 2-Grading/Excavation	Scrapers	6	8.00	367	0.48
Phase 2-Grading/Excavation	Off-Highway Trucks	2	8.00	402	0.38
Phase 2-Grading/Excavation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Phase 2-Drainage/Utilities/Sub-Grade	Rubber Tired Dozers	3	8.00	247	0.40
Phase 2-Drainage/Utilities/Sub-Grade	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Phase 2-Foundations/Concrete Pour	Cranes	1	8.00	231	0.29
Phase 2-Foundations/Concrete Pour	Forklifts	3	8.00	89	0.20
Phase 2-Foundations/Concrete Pour	Generator Sets	1	8.00	84	0.74
Phase 2-Foundations/Concrete Pour	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Phase 2-Foundations/Concrete Pour	Pumps	1	8.00	84	0.74
Phase 2-Building Construction	Cranes	1	8.00	231	0.29
Phase 2-Building Construction	Forklifts	3	8.00	89	0.20
Phase 2-Building Construction	Generator Sets	1	8.00	84	0.74
Phase 2-Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Phase 2-Building Construction	Welders	1	8.00	46	0.45
Phase 2-Architectural Coatings	Air Compressors	1	8.00	78	0.48
Phase 2-Paving	Pavers	2	8.00	130	0.42
Phase 2-Paving	Paving Equipment	2	8.00	132	0.36
Phase 2-Paving	Rollers	2	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
Phase 1A-Grading/Excavation	10	26.00	0.00	800.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 1A-Drainage/Utilities/Sub-	11	28.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 1A-Foundations/Concrete	65	164.00	0.00	1,200.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 1A-Building Construction	14	300.00	0.00	2,100.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 1A-Architectural Coatings	1	60.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 1A-Paving	12	30.00	0.00	14.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 1B-Grading/Excavation	7	18.00	0.00	680.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 1B-Drainage/Utilities/Sub-	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 1B-Foundations/Concrete	9	24.00	0.00	1,020.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 1B-Building Construction	11	138.00	0.00	1,944.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 1B-Architectural Coatings	1	28.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 1B-Paving	6	16.00	0.00	22.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 2-Demolition	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 2-Grading/Excavation	14	36.00	0.00	1,240.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 2-Drainage/Utilities/Sub-	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 2-Foundations/Concrete	9	24.00	0.00	1,860.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 2-Building Construction	9	304.00	0.00	2,612.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 2-Architectural Coatings	1	62.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Phase 2-Paving	6	6.00	0.00	42.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Phase 1A-Grading/Excavation - 2020

Unmitigated Construction On-Site

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

Category	tons/yr										MT/yr					
Fugitive Dust					0.1937	0.0000	0.1937	0.0608	0.0000	0.0608	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1258	1.4490	0.8518	1.8400e-003		0.0581	0.0581		0.0534	0.0534	0.0000	161.2731	161.2731	0.0522	0.0000	162.5771
Total	**0.1258**	**1.4490**	**0.8518**	**1.8400e-003**	**0.1937**	**0.0581**	**0.2518**	**0.0608**	**0.0534**	**0.1142**	**0.0000**	**161.2731**	**161.2731**	**0.0522**	**0.0000**	**162.5771**

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	3.3400e-003	0.1170	0.0235	3.2000e-004	6.7600e-003	3.8000e-004	7.1300e-003	1.8600e-003	3.6000e-004	2.2200e-003	0.0000	30.6549	30.6549	1.5800e-003	0.0000	30.6944
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2900e-003	9.2000e-004	9.5800e-003	3.0000e-005	3.0800e-003	2.0000e-005	3.1000e-003	8.2000e-004	2.0000e-005	8.4000e-004	0.0000	2.6999	2.6999	7.0000e-005	0.0000	2.7015
Total	**4.6300e-003**	**0.1179**	**0.0331**	**3.5000e-004**	**9.8400e-003**	**4.0000e-004**	**0.0102**	**2.6800e-003**	**3.8000e-004**	**3.0600e-003**	**0.0000**	**33.3548**	**33.3548**	**1.6500e-003**	**0.0000**	**33.3959**

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					0.1937	0.0000	0.1937	0.0608	0.0000	0.0608	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0451	0.8762	0.9879	1.8400e-003		0.0341	0.0341		0.0341	0.0341	0.0000	161.2729	161.2729	0.0522	0.0000	162.5769

Total	**0.0451**	**0.8762**	**0.9879**	**1.8400e-003**	**0.1937**	**0.0341**	**0.2278**	**0.0608**	**0.0341**	**0.0949**	**0.0000**	**161.2729**	**161.2729**	**0.0522**	**0.0000**	**162.5769**

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	3.3400e-003	0.1170	0.0235	3.2000e-004	6.7600e-003	3.8000e-004	7.1300e-003	1.8600e-003	3.6000e-004	2.2200e-003	0.0000	30.6549	30.6549	1.5800e-003	0.0000	30.6944
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2900e-003	9.2000e-004	9.5800e-003	3.0000e-005	3.0800e-003	2.0000e-005	3.1000e-003	8.2000e-004	2.0000e-005	8.4000e-004	0.0000	2.6999	2.6999	7.0000e-005	0.0000	2.7015
Total	**4.6300e-003**	**0.1179**	**0.0331**	**3.5000e-004**	**9.8400e-003**	**4.0000e-004**	**0.0102**	**2.6800e-003**	**3.8000e-004**	**3.0600e-003**	**0.0000**	**33.3548**	**33.3548**	**1.6500e-003**	**0.0000**	**33.3959**

3.3 Phase 1B-Grading/Excavation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1671	0.0000	0.1671	0.0859	0.0000	0.0859	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0788	0.8341	0.5065	1.0900e-003		0.0384	0.0384		0.0353	0.0353	0.0000	96.0284	96.0284	0.0311	0.0000	96.8049
Total	**0.0788**	**0.8341**	**0.5065**	**1.0900e-003**	**0.1671**	**0.0384**	**0.2054**	**0.0859**	**0.0353**	**0.1212**	**0.0000**	**96.0284**	**96.0284**	**0.0311**	**0.0000**	**96.8049**

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	2.8400e-003	0.0994	0.0200	2.7000e-004	5.7400e-003	3.2000e-004	6.0600e-003	1.5800e-003	3.1000e-004	1.8900e-003	0.0000	26.0567	26.0567	1.3400e-003	0.0000	26.0902
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.0900e-003	0.0113	4.0000e-005	3.6300e-003	2.0000e-005	3.6500e-003	9.6000e-004	2.0000e-005	9.9000e-004	0.0000	3.1776	3.1776	8.0000e-005	0.0000	3.1795
Total	**4.3600e-003**	**0.1005**	**0.0313**	**3.1000e-004**	**9.3700e-003**	**3.4000e-004**	**9.7100e-003**	**2.5400e-003**	**3.3000e-004**	**2.8800e-003**	**0.0000**	**29.2343**	**29.2343**	**1.4200e-003**	**0.0000**	**29.2697**

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					0.1671	0.0000	0.1671	0.0859	0.0000	0.0859	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0268	0.5378	0.6629	1.0900e-003		0.0253	0.0253		0.0253	0.0253	0.0000	96.0283	96.0283	0.0311	0.0000	96.8048
Total	**0.0268**	**0.5378**	**0.6629**	**1.0900e-003**	**0.1671**	**0.0253**	**0.1924**	**0.0859**	**0.0253**	**0.1112**	**0.0000**	**96.0283**	**96.0283**	**0.0311**	**0.0000**	**96.8048**

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	2.8400e-003	0.0994	0.0200	2.7000e-004	5.7400e-003	3.2000e-004	6.0600e-003	1.5800e-003	3.1000e-004	1.8900e-003	0.0000	26.0567	26.0567	1.3400e-003	0.0000	26.0902
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.0900e-003	0.0113	4.0000e-005	3.6300e-003	2.0000e-005	3.6500e-003	9.6000e-004	2.0000e-005	9.9000e-004	0.0000	3.1776	3.1776	8.0000e-005	0.0000	3.1795
Total	**4.3600e-003**	**0.1005**	**0.0313**	**3.1000e-004**	**9.3700e-003**	**3.4000e-004**	**9.7100e-003**	**2.5400e-003**	**3.3000e-004**	**2.8800e-003**	**0.0000**	**29.2343**	**29.2343**	**1.4200e-003**	**0.0000**	**29.2697**

3.4 Phase 1A-Drainage/Utilities/Sub-Grade - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0104	0.1044	0.0896	1.9000e-004		4.8100e-003	4.8100e-003		4.4300e-003	4.4300e-003	0.0000	16.3391	16.3391	5.2400e-003	0.0000	16.4702
Total	**0.0104**	**0.1044**	**0.0896**	**1.9000e-004**	**0.0000**	**4.8100e-003**	**4.8100e-003**	**0.0000**	**4.4300e-003**	**4.4300e-003**	**0.0000**	**16.3391**	**16.3391**	**5.2400e-003**	**0.0000**	**16.4702**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	2.3000e-004	2.4100e-003	1.0000e-005	7.7000e-004	1.0000e-005	7.8000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6784	0.6784	2.0000e-005	0.0000	0.6789
Total	**3.2000e-004**	**2.3000e-004**	**2.4100e-003**	**1.0000e-005**	**7.7000e-004**	**1.0000e-005**	**7.8000e-004**	**2.1000e-004**	**0.0000**	**2.1000e-004**	**0.0000**	**0.6784**	**0.6784**	**2.0000e-005**	**0.0000**	**0.6789**

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.7600e-003	0.0924	0.1191	1.9000e-004		4.5000e-003	4.5000e-003		4.5000e-003	4.5000e-003	0.0000	16.3391	16.3391	5.2400e-003	0.0000	16.4702
Total	**4.7600e-003**	**0.0924**	**0.1191**	**1.9000e-004**	**0.0000**	**4.5000e-003**	**4.5000e-003**	**0.0000**	**4.5000e-003**	**4.5000e-003**	**0.0000**	**16.3391**	**16.3391**	**5.2400e-003**	**0.0000**	**16.4702**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	2.3000e-004	2.4100e-003	1.0000e-005	7.7000e-004	1.0000e-005	7.8000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6784	0.6784	2.0000e-005	0.0000	0.6789
Total	**3.2000e-004**	**2.3000e-004**	**2.4100e-003**	**1.0000e-005**	**7.7000e-004**	**1.0000e-005**	**7.8000e-004**	**2.1000e-004**	**0.0000**	**2.1000e-004**	**0.0000**	**0.6784**	**0.6784**	**2.0000e-005**	**0.0000**	**0.6789**

3.5 Phase 1A-Foundations/Concrete Pour - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0359	0.2474	0.2214	4.5000e-004		0.0116	0.0116		0.0115	0.0115	0.0000	32.1221	32.1221	3.6100e-003	0.0000	32.2124
Total	**0.0359**	**0.2474**	**0.2214**	**4.5000e-004**	**0.0000**	**0.0116**	**0.0116**	**0.0000**	**0.0115**	**0.0115**	**0.0000**	**32.1221**	**32.1221**	**3.6100e-003**	**0.0000**	**32.2124**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.0100e-003	0.1754	0.0353	4.7000e-004	0.0101	5.7000e-004	0.0107	2.7900e-003	5.4000e-004	3.3300e-003	0.0000	45.9824	45.9824	2.3700e-003	0.0000	46.0416
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	4.0800e-003	2.9200e-003	0.0302	9.0000e-005	9.7200e-003	7.0000e-005	9.7800e-003	2.5900e-003	6.0000e-005	2.6500e-003	0.0000	8.5151	8.5151	2.1000e-004	0.0000	8.5202
Total	**9.0900e-003**	**0.1783**	**0.0655**	**5.6000e-004**	**0.0199**	**6.4000e-004**	**0.0205**	**5.3800e-003**	**6.0000e-004**	**5.9800e-003**	**0.0000**	**54.4974**	**54.4974**	**2.5800e-003**	**0.0000**	**54.5618**

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	0.0293	0.2301	0.2258	4.5000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	32.1221	32.1221	3.6100e-003	0.0000	32.2123
Total	**0.0293**	**0.2301**	**0.2258**	**4.5000e-004**	**0.0000**	**0.0110**	**0.0110**	**0.0000**	**0.0110**	**0.0110**	**0.0000**	**32.1221**	**32.1221**	**3.6100e-003**	**0.0000**	**32.2123**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.0100e-003	0.1754	0.0353	4.7000e-004	0.0101	5.7000e-004	0.0107	2.7900e-003	5.4000e-004	3.3300e-003	0.0000	45.9824	45.9824	2.3700e-003	0.0000	46.0416
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	4.0800e-003	2.9200e-003	0.0302	9.0000e-005	9.7200e-003	7.0000e-005	9.7800e-003	2.5900e-003	6.0000e-005	2.6500e-003	0.0000	8.5151	8.5151	2.1000e-004	0.0000	8.5202
Total	**9.0900e-003**	**0.1783**	**0.0655**	**5.6000e-004**	**0.0199**	**6.4000e-004**	**0.0205**	**5.3800e-003**	**6.0000e-004**	**5.9800e-003**	**0.0000**	**54.4974**	**54.4974**	**2.5800e-003**	**0.0000**	**54.5618**

3.6 Phase 1A-Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1290	1.3654	1.2012	2.0800e-003		0.0611	0.0611		0.0569	0.0569	0.0000	181.4380	181.4380	0.0532	0.0000	182.7670
Total	**0.1290**	**1.3654**	**1.2012**	**2.0800e-003**		**0.0611**	**0.0611**		**0.0569**	**0.0569**	**0.0000**	**181.4380**	**181.4380**	**0.0532**	**0.0000**	**182.7670**

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	8.7600e-003	0.3070	0.0617	8.3000e-004	0.0177	9.9000e-004	0.0187	4.8800e-003	9.5000e-004	5.8200e-003	0.0000	80.4692	80.4692	4.1400e-003	0.0000	80.5727
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0298	0.0213	0.2211	6.9000e-004	0.0711	4.8000e-004	0.0716	0.0189	4.4000e-004	0.0194	0.0000	62.3053	62.3053	1.5100e-003	0.0000	62.3430
Total	**0.0386**	**0.3283**	**0.2827**	**1.5200e-003**	**0.0889**	**1.4700e-003**	**0.0903**	**0.0238**	**1.3900e-003**	**0.0252**	**0.0000**	**142.7744**	**142.7744**	**5.6500e-003**	**0.0000**	**142.9157**

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	0.0586	0.9952	1.4538	2.0800e-003		0.0484	0.0484		0.0484	0.0484	0.0000	181.4378	181.4378	0.0532	0.0000	182.7668
Total	**0.0586**	**0.9952**	**1.4538**	**2.0800e-003**		**0.0484**	**0.0484**		**0.0484**	**0.0484**	**0.0000**	**181.4378**	**181.4378**	**0.0532**	**0.0000**	**182.7668**

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	8.7600e-003	0.3070	0.0617	8.3000e-004	0.0177	9.9000e-004	0.0187	4.8800e-003	9.5000e-004	5.8200e-003	0.0000	80.4692	80.4692	4.1400e-003	0.0000	80.5727
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0298	0.0213	0.2211	6.9000e-004	0.0711	4.8000e-004	0.0716	0.0189	4.4000e-004	0.0194	0.0000	62.3053	62.3053	1.5100e-003	0.0000	62.3430
Total	**0.0386**	**0.3283**	**0.2827**	**1.5200e-003**	**0.0889**	**1.4700e-003**	**0.0903**	**0.0238**	**1.3900e-003**	**0.0252**	**0.0000**	**142.7744**	**142.7744**	**5.6500e-003**	**0.0000**	**142.9157**

3.7 Phase 1A-Architectural Coatings - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8769					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0700e-003	0.0561	0.0611	1.0000e-004		3.7000e-003	3.7000e-003		3.7000e-003	3.7000e-003	0.0000	8.5109	8.5109	6.6000e-004	0.0000	8.5273
Total	**0.8850**	**0.0561**	**0.0611**	**1.0000e-004**		**3.7000e-003**	**3.7000e-003**		**3.7000e-003**	**3.7000e-003**	**0.0000**	**8.5109**	**8.5109**	**6.6000e-004**	**0.0000**	**8.5273**

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	4.9700e-003	3.5600e-003	0.0368	1.1000e-004	0.0119	8.0000e-005	0.0119	3.1500e-003	7.0000e-005	3.2300e-003	0.0000	10.3842	10.3842	2.5000e-004	0.0000	10.3905
Total	**4.9700e-003**	**3.5600e-003**	**0.0368**	**1.1000e-004**	**0.0119**	**8.0000e-005**	**0.0119**	**3.1500e-003**	**7.0000e-005**	**3.2300e-003**	**0.0000**	**10.3842**	**10.3842**	**2.5000e-004**	**0.0000**	**10.3905**

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	0.8769					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9800e-003	0.0452	0.0611	1.0000e-004		3.1700e-003	3.1700e-003		3.1700e-003	3.1700e-003	0.0000	8.5108	8.5108	6.6000e-004	0.0000	8.5273
Total	**0.8789**	**0.0452**	**0.0611**	**1.0000e-004**		**3.1700e-003**	**3.1700e-003**		**3.1700e-003**	**3.1700e-003**	**0.0000**	**8.5108**	**8.5108**	**6.6000e-004**	**0.0000**	**8.5273**

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	4.9700e-003	3.5600e-003	0.0368	1.1000e-004	0.0119	8.0000e-005	0.0119	3.1500e-003	7.0000e-005	3.2300e-003	0.0000	10.3842	10.3842	2.5000e-004	0.0000	10.3905
Total	**4.9700e-003**	**3.5600e-003**	**0.0368**	**1.1000e-004**	**0.0119**	**8.0000e-005**	**0.0119**	**3.1500e-003**	**7.0000e-005**	**3.2300e-003**	**0.0000**	**10.3842**	**10.3842**	**2.5000e-004**	**0.0000**	**10.3905**

3.8 Phase 1B-Drainage/Utilities/Sub-Grade - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0994	0.0000	0.0994	0.0546	0.0000	0.0546	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0224	0.2333	0.1183	2.1000e-004		0.0121	0.0121		0.0111	0.0111	0.0000	18.3869	18.3869	5.9500e-003	0.0000	18.5355
Total	**0.0224**	**0.2333**	**0.1183**	**2.1000e-004**	**0.0994**	**0.0121**	**0.1115**	**0.0546**	**0.0111**	**0.0657**	**0.0000**	**18.3869**	**18.3869**	**5.9500e-003**	**0.0000**	**18.5355**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	2.3000e-004	2.4300e-003	1.0000e-005	7.8000e-004	1.0000e-005	7.9000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6854	0.6854	2.0000e-005	0.0000	0.6858
Total	**3.3000e-004**	**2.3000e-004**	**2.4300e-003**	**1.0000e-005**	**7.8000e-004**	**1.0000e-005**	**7.9000e-004**	**2.1000e-004**	**0.0000**	**2.1000e-004**	**0.0000**	**0.6854**	**0.6854**	**2.0000e-005**	**0.0000**	**0.6858**

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					0.0994	0.0000	0.0994	0.0546	0.0000	0.0546	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	5.1200e-003	0.1049	0.1263	2.1000e-004		5.2000e-003	5.2000e-003		5.2000e-003	5.2000e-003	0.0000	18.3869	18.3869	5.9500e-003	0.0000	18.5355
Total	**5.1200e-003**	**0.1049**	**0.1263**	**2.1000e-004**	**0.0994**	**5.2000e-003**	**0.1046**	**0.0546**	**5.2000e-003**	**0.0598**	**0.0000**	**18.3869**	**18.3869**	**5.9500e-003**	**0.0000**	**18.5355**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	2.3000e-004	2.4300e-003	1.0000e-005	7.8000e-004	1.0000e-005	7.9000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6854	0.6854	2.0000e-005	0.0000	0.6858
Total	**3.3000e-004**	**2.3000e-004**	**2.4300e-003**	**1.0000e-005**	**7.8000e-004**	**1.0000e-005**	**7.9000e-004**	**2.1000e-004**	**0.0000**	**2.1000e-004**	**0.0000**	**0.6854**	**0.6854**	**2.0000e-005**	**0.0000**	**0.6858**

3.9 Phase 1B-Foundations/Concrete Pour - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0257	0.2487	0.2196	3.6000e-004		0.0145	0.0145		0.0137	0.0137	0.0000	31.4465	31.4465	6.8700e-003	0.0000	31.6183
Total	**0.0257**	**0.2487**	**0.2196**	**3.6000e-004**	**0.0000**	**0.0145**	**0.0145**	**0.0000**	**0.0137**	**0.0137**	**0.0000**	**31.4465**	**31.4465**	**6.8700e-003**	**0.0000**	**31.6183**

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	4.2600e-003	0.1491	0.0300	4.0000e-004	8.6100e-003	4.8000e-004	9.1000e-003	2.3700e-003	4.6000e-004	2.8300e-003	0.0000	39.0850	39.0850	2.0100e-003	0.0000	39.1353
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	8.7000e-004	6.3000e-004	6.4800e-003	2.0000e-005	2.0900e-003	1.0000e-005	2.1000e-003	5.5000e-004	1.0000e-005	5.7000e-004	0.0000	1.8276	1.8276	4.0000e-005	0.0000	1.8287
Total	**5.1300e-003**	**0.1497**	**0.0365**	**4.2000e-004**	**0.0107**	**4.9000e-004**	**0.0112**	**2.9200e-003**	**4.7000e-004**	**3.4000e-003**	**0.0000**	**40.9127**	**40.9127**	**2.0500e-003**	**0.0000**	**40.9641**

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.2000e-003	0.1819	0.2387	3.6000e-004		0.0118	0.0118		0.0118	0.0118	0.0000	31.4465	31.4465	6.8700e-003	0.0000	31.6182
Total	**8.2000e-003**	**0.1819**	**0.2387**	**3.6000e-004**	**0.0000**	**0.0118**	**0.0118**	**0.0000**	**0.0118**	**0.0118**	**0.0000**	**31.4465**	**31.4465**	**6.8700e-003**	**0.0000**	**31.6182**

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	4.2600e-003	0.1491	0.0300	4.0000e-004	8.6100e-003	4.8000e-004	9.1000e-003	2.3700e-003	4.6000e-004	2.8300e-003	0.0000	39.0850	39.0850	2.0100e-003	0.0000	39.1353
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	8.7000e-004	6.3000e-004	6.4800e-003	2.0000e-005	2.0900e-003	1.0000e-005	2.1000e-003	5.5000e-004	1.0000e-005	5.7000e-004	0.0000	1.8276	1.8276	4.0000e-005	0.0000	1.8287
Total	**5.1300e-003**	**0.1497**	**0.0365**	**4.2000e-004**	**0.0107**	**4.9000e-004**	**0.0112**	**2.9200e-003**	**4.7000e-004**	**3.4000e-003**	**0.0000**	**40.9127**	**40.9127**	**2.0500e-003**	**0.0000**	**40.9641**

3.10 Phase 1A-Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0136	0.1362	0.1150	2.5000e-004		6.1400e-003	6.1400e-003		5.6500e-003	5.6500e-003	0.0000	22.0753	22.0753	7.1400e-003	0.0000	22.2538
Paving	0.0314					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0450**	**0.1362**	**0.1150**	**2.5000e-004**		**6.1400e-003**	**6.1400e-003**		**5.6500e-003**	**5.6500e-003**	**0.0000**	**22.0753**	**22.0753**	**7.1400e-003**	**0.0000**	**22.2538**

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	6.0000e-005	2.0500e-003	4.1000e-004	1.0000e-005	1.2000e-004	1.0000e-005	1.2000e-004	3.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.5365	0.5365	3.0000e-005	0.0000	0.5372
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.5000e-004	2.5800e-003	1.0000e-005	8.3000e-004	1.0000e-005	8.4000e-004	2.2000e-004	1.0000e-005	2.3000e-004	0.0000	0.7269	0.7269	2.0000e-005	0.0000	0.7273
Total	**4.1000e-004**	**2.3000e-003**	**2.9900e-003**	**2.0000e-005**	**9.5000e-004**	**2.0000e-005**	**9.6000e-004**	**2.5000e-004**	**2.0000e-005**	**2.7000e-004**	**0.0000**	**1.2634**	**1.2634**	**5.0000e-005**	**0.0000**	**1.2645**

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	6.1600e-003	0.1222	0.1590	2.5000e-004		5.6400e-003	5.6400e-003		5.6400e-003	5.6400e-003	0.0000	22.0752	22.0752	7.1400e-003	0.0000	22.2537
Paving	0.0314					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0376**	**0.1222**	**0.1590**	**2.5000e-004**		**5.6400e-003**	**5.6400e-003**		**5.6400e-003**	**5.6400e-003**	**0.0000**	**22.0752**	**22.0752**	**7.1400e-003**	**0.0000**	**22.2537**

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	6.0000e-005	2.0500e-003	4.1000e-004	1.0000e-005	1.2000e-004	1.0000e-005	1.2000e-004	3.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.5365	0.5365	3.0000e-005	0.0000	0.5372
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.5000e-004	2.5800e-003	1.0000e-005	8.3000e-004	1.0000e-005	8.4000e-004	2.2000e-004	1.0000e-005	2.3000e-004	0.0000	0.7269	0.7269	2.0000e-005	0.0000	0.7273
Total	**4.1000e-004**	**2.3000e-003**	**2.9900e-003**	**2.0000e-005**	**9.5000e-004**	**2.0000e-005**	**9.6000e-004**	**2.5000e-004**	**2.0000e-005**	**2.7000e-004**	**0.0000**	**1.2634**	**1.2634**	**5.0000e-005**	**0.0000**	**1.2645**

3.11 Phase 1B-Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1508	1.2935	1.1503	1.8100e-003		0.0758	0.0758		0.0714	0.0714	0.0000	154.2363	154.2363	0.0379	0.0000	155.1849
Total	**0.1508**	**1.2935**	**1.1503**	**1.8100e-003**		**0.0758**	**0.0758**		**0.0714**	**0.0714**	**0.0000**	**154.2363**	**154.2363**	**0.0379**	**0.0000**	**155.1849**

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	6.0300e-003	0.2112	0.0425	5.7000e-004	0.0154	6.8000e-004	0.0160	4.1300e-003	6.5000e-004	4.7800e-003	0.0000	55.3653	55.3653	2.8500e-003	0.0000	55.4365
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0252	0.0180	0.1864	5.8000e-004	0.0600	4.0000e-004	0.0604	0.0160	3.7000e-004	0.0163	0.0000	52.5441	52.5441	1.2700e-003	0.0000	52.5759
Total	**0.0312**	**0.2292**	**0.2289**	**1.1500e-003**	**0.0753**	**1.0800e-003**	**0.0764**	**0.0201**	**1.0200e-003**	**0.0211**	**0.0000**	**107.9094**	**107.9094**	**4.1200e-003**	**0.0000**	**108.0124**

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	0.0735	0.9642	1.2284	1.8100e-003		0.0602	0.0602		0.0602	0.0602	0.0000	154.2362	154.2362	0.0379	0.0000	155.1848

Total	**0.0735**	**0.9642**	**1.2284**	**1.8100e-003**		**0.0602**	**0.0602**		**0.0602**	**0.0602**	**0.0000**	**154.2362**	**154.2362**	**0.0379**	**0.0000**	**155.1848**

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	6.0300e-003	0.2112	0.0425	5.7000e-004	0.0154	6.8000e-004	0.0160	4.1300e-003	6.5000e-004	4.7800e-003	0.0000	55.3653	55.3653	2.8500e-003	0.0000	55.4365
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0252	0.0180	0.1864	5.8000e-004	0.0600	4.0000e-004	0.0604	0.0160	3.7000e-004	0.0163	0.0000	52.5441	52.5441	1.2700e-003	0.0000	52.5759
Total	**0.0312**	**0.2292**	**0.2289**	**1.1500e-003**	**0.0753**	**1.0800e-003**	**0.0764**	**0.0201**	**1.0200e-003**	**0.0211**	**0.0000**	**107.9094**	**107.9094**	**4.1200e-003**	**0.0000**	**108.0124**

3.11 Phase 1B-Building Construction - 2021

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	0.0466	0.4073	0.3906	6.2000e-004		0.0225	0.0225		0.0212	0.0212	0.0000	53.2876	53.2876	0.0129	0.0000	53.6108
Total	**0.0466**	**0.4073**	**0.3906**	**6.2000e-004**		**0.0225**	**0.0225**		**0.0212**	**0.0212**	**0.0000**	**53.2876**	**53.2876**	**0.0129**	**0.0000**	**53.6108**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9700e-003	0.0674	0.0144	1.9000e-004	0.0134	2.1000e-004	0.0136	3.4000e-003	2.0000e-004	3.6000e-003	0.0000	18.8809	18.8809	9.6000e-004	0.0000	18.9050
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	8.0500e-003	5.5500e-003	0.0588	1.9000e-004	0.0207	1.4000e-004	0.0209	5.5100e-003	1.2000e-004	5.6400e-003	0.0000	17.5147	17.5147	3.9000e-004	0.0000	17.5245
Total	**0.0100**	**0.0729**	**0.0732**	**3.8000e-004**	**0.0341**	**3.5000e-004**	**0.0344**	**8.9100e-003**	**3.2000e-004**	**9.2400e-003**	**0.0000**	**36.3956**	**36.3956**	**1.3500e-003**	**0.0000**	**36.4295**

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	0.0239	0.3307	0.4225	6.2000e-004		0.0203	0.0203		0.0203	0.0203	0.0000	53.2875	53.2875	0.0129	0.0000	53.6107
Total	**0.0239**	**0.3307**	**0.4225**	**6.2000e-004**		**0.0203**	**0.0203**		**0.0203**	**0.0203**	**0.0000**	**53.2875**	**53.2875**	**0.0129**	**0.0000**	**53.6107**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	1.9700e-003	0.0674	0.0144	1.9000e-004	0.0134	2.1000e-004	0.0136	3.4000e-003	2.0000e-004	3.6000e-003	0.0000	18.8809	18.8809	9.6000e-004	0.0000	18.9050
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	8.0500e-003	5.5500e-003	0.0588	1.9000e-004	0.0207	1.4000e-004	0.0209	5.5100e-003	1.2000e-004	5.6400e-003	0.0000	17.5147	17.5147	3.9000e-004	0.0000	17.5245
Total	**0.0100**	**0.0729**	**0.0732**	**3.8000e-004**	**0.0341**	**3.5000e-004**	**0.0344**	**8.9100e-003**	**3.2000e-004**	**9.2400e-003**	**0.0000**	**36.3956**	**36.3956**	**1.3500e-003**	**0.0000**	**36.4295**

3.12 Phase 1B-Architectural Coatings - 2021

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	0.7421					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6300e-003	0.0183	0.0218	4.0000e-005		1.1300e-003	1.1300e-003		1.1300e-003	1.1300e-003	0.0000	3.0639	3.0639	2.1000e-004	0.0000	3.0692
Total	**0.7448**	**0.0183**	**0.0218**	**4.0000e-005**		**1.1300e-003**	**1.1300e-003**		**1.1300e-003**	**1.1300e-003**	**0.0000**	**3.0639**	**3.0639**	**2.1000e-004**	**0.0000**	**3.0692**

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	7.7000e-004	5.3000e-004	5.6500e-003	2.0000e-005	1.9900e-003	1.0000e-005	2.0000e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.6833	1.6833	4.0000e-005	0.0000	1.6843
Total	**7.7000e-004**	**5.3000e-004**	**5.6500e-003**	**2.0000e-005**	**1.9900e-003**	**1.0000e-005**	**2.0000e-003**	**5.3000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.6833**	**1.6833**	**4.0000e-005**	**0.0000**	**1.6843**

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	0.7421					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.1000e-004	0.0163	0.0220	4.0000e-005		1.1400e-003	1.1400e-003		1.1400e-003	1.1400e-003	0.0000	3.0639	3.0639	2.1000e-004	0.0000	3.0692
Total	**0.7428**	**0.0163**	**0.0220**	**4.0000e-005**		**1.1400e-003**	**1.1400e-003**		**1.1400e-003**	**1.1400e-003**	**0.0000**	**3.0639**	**3.0639**	**2.1000e-004**	**0.0000**	**3.0692**

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	7.7000e-004	5.3000e-004	5.6500e-003	2.0000e-005	1.9900e-003	1.0000e-005	2.0000e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.6833	1.6833	4.0000e-005	0.0000	1.6843
Total	**7.7000e-004**	**5.3000e-004**	**5.6500e-003**	**2.0000e-005**	**1.9900e-003**	**1.0000e-005**	**2.0000e-003**	**5.3000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.6833**	**1.6833**	**4.0000e-005**	**0.0000**	**1.6843**

3.13 Phase 1B-Paving - 2021

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	6.9100e-003	0.0711	0.0806	1.3000e-004		3.7300e-003	3.7300e-003		3.4300e-003	3.4300e-003	0.0000	11.0129	11.0129	3.5600e-003	0.0000	11.1020
Paving	0.0314					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0383**	**0.0711**	**0.0806**	**1.3000e-004**		**3.7300e-003**	**3.7300e-003**		**3.4300e-003**	**3.4300e-003**	**0.0000**	**11.0129**	**11.0129**	**3.5600e-003**	**0.0000**	**11.1020**

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	9.0000e-005	2.9700e-003	6.3000e-004	1.0000e-005	1.9000e-004	1.0000e-005	1.9000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.8322	0.8322	4.0000e-005	0.0000	0.8333
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	2.7000e-004	1.9000e-004	1.9700e-003	1.0000e-005	7.0000e-004	0.0000	7.0000e-004	1.8000e-004	0.0000	1.9000e-004	0.0000	0.5878	0.5878	1.0000e-005	0.0000	0.5882
Total	**3.6000e-004**	**3.1600e-003**	**2.6000e-003**	**2.0000e-005**	**8.9000e-004**	**1.0000e-005**	**8.9000e-004**	**2.3000e-004**	**1.0000e-005**	**2.5000e-004**	**0.0000**	**1.4200**	**1.4200**	**5.0000e-005**	**0.0000**	**1.4214**

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	3.0900e-003	0.0621	0.0951	1.3000e-004		3.3500e-003	3.3500e-003		3.3500e-003	3.3500e-003	0.0000	11.0129	11.0129	3.5600e-003	0.0000	11.1020

Paving	0.0314					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0345**	**0.0621**	**0.0951**	**1.3000e-004**		**3.3500e-003**	**3.3500e-003**		**3.3500e-003**	**3.3500e-003**	**0.0000**	**11.0129**	**11.0129**	**3.5600e-003**	**0.0000**	**11.1020**

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	9.0000e-005	2.9700e-003	6.3000e-004	1.0000e-005	1.9000e-004	1.0000e-005	1.9000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.8322	0.8322	4.0000e-005	0.0000	0.8333
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	2.7000e-004	1.9000e-004	1.9700e-003	1.0000e-005	7.0000e-004	0.0000	7.0000e-004	1.8000e-004	0.0000	1.9000e-004	0.0000	0.5878	0.5878	1.0000e-005	0.0000	0.5882
Total	**3.6000e-004**	**3.1600e-003**	**2.6000e-003**	**2.0000e-005**	**8.9000e-004**	**1.0000e-005**	**8.9000e-004**	**2.3000e-004**	**1.0000e-005**	**2.5000e-004**	**0.0000**	**1.4200**	**1.4200**	**5.0000e-005**	**0.0000**	**1.4214**

3.14 Phase 2-Demolition - 2030

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	0.0127	0.0604	0.1305	2.9000e-004		2.0600e-003	2.0600e-003		2.0600e-003	2.0600e-003	0.0000	25.2789	25.2789	1.0200e-003	0.0000	25.3043
Total	**0.0127**	**0.0604**	**0.1305**	**2.9000e-004**		**2.0600e-003**	**2.0600e-003**		**2.0600e-003**	**2.0600e-003**	**0.0000**	**25.2789**	**25.2789**	**1.0200e-003**	**0.0000**	**25.3043**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	9.0000e-005	1.1800e-003	1.0000e-005	7.9000e-004	0.0000	7.9000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.4870	0.4870	1.0000e-005	0.0000	0.4872
Total	**1.8000e-004**	**9.0000e-005**	**1.1800e-003**	**1.0000e-005**	**7.9000e-004**	**0.0000**	**7.9000e-004**	**2.1000e-004**	**0.0000**	**2.1000e-004**	**0.0000**	**0.4870**	**0.4870**	**1.0000e-005**	**0.0000**	**0.4872**

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	5.8800e-003	0.1181	0.1623	2.9000e-004		5.9100e-003	5.9100e-003		5.9100e-003	5.9100e-003	0.0000	25.2788	25.2788	1.0200e-003	0.0000	25.3043
Total	**5.8800e-003**	**0.1181**	**0.1623**	**2.9000e-004**		**5.9100e-003**	**5.9100e-003**		**5.9100e-003**	**5.9100e-003**	**0.0000**	**25.2788**	**25.2788**	**1.0200e-003**	**0.0000**	**25.3043**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	9.0000e-005	1.1800e-003	1.0000e-005	7.9000e-004	0.0000	7.9000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.4870	0.4870	1.0000e-005	0.0000	0.4872
Total	**1.8000e-004**	**9.0000e-005**	**1.1800e-003**	**1.0000e-005**	**7.9000e-004**	**0.0000**	**7.9000e-004**	**2.1000e-004**	**0.0000**	**2.1000e-004**	**0.0000**	**0.4870**	**0.4870**	**1.0000e-005**	**0.0000**	**0.4872**

3.15 Phase 2-Grading/Excavation - 2030

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					0.1345	0.0000	0.1345	0.0411	0.0000	0.0411	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0773	0.2982	0.4168	1.6100e-003		0.0109	0.0109		0.0109	0.0109	0.0000	158.8000	158.8000	6.2200e-003	0.0000	158.9554
Total	**0.0773**	**0.2982**	**0.4168**	**1.6100e-003**	**0.1345**	**0.0109**	**0.1453**	**0.0411**	**0.0109**	**0.0520**	**0.0000**	**158.8000**	**158.8000**	**6.2200e-003**	**0.0000**	**158.9554**

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	2.9300e-003	0.0892	0.0323	4.4000e-004	0.0105	1.6000e-004	0.0106	2.8800e-003	1.5000e-004	3.0400e-003	0.0000	42.5886	42.5886	2.0500e-003	0.0000	42.6398
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.4000e-004	3.3000e-004	4.2600e-003	2.0000e-005	2.8400e-003	1.0000e-005	2.8600e-003	7.6000e-004	1.0000e-005	7.7000e-004	0.0000	1.7533	1.7533	2.0000e-005	0.0000	1.7539
Total	**3.5700e-003**	**0.0895**	**0.0366**	**4.6000e-004**	**0.0133**	**1.7000e-004**	**0.0135**	**3.6400e-003**	**1.6000e-004**	**3.8100e-003**	**0.0000**	**44.3419**	**44.3419**	**2.0700e-003**	**0.0000**	**44.3936**

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					0.1345	0.0000	0.1345	0.0411	0.0000	0.0411	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0370	0.7199	0.8264	1.6100e-003		0.0287	0.0287		0.0287	0.0287	0.0000	158.7998	158.7998	6.2200e-003	0.0000	158.9553
Total	**0.0370**	**0.7199**	**0.8264**	**1.6100e-003**	**0.1345**	**0.0287**	**0.1631**	**0.0411**	**0.0287**	**0.0698**	**0.0000**	**158.7998**	**158.7998**	**6.2200e-003**	**0.0000**	**158.9553**

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	2.9300e-003	0.0892	0.0323	4.4000e-004	0.0105	1.6000e-004	0.0106	2.8800e-003	1.5000e-004	3.0400e-003	0.0000	42.5886	42.5886	2.0500e-003	0.0000	42.6398
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.4000e-004	3.3000e-004	4.2600e-003	2.0000e-005	2.8400e-003	1.0000e-005	2.8600e-003	7.6000e-004	1.0000e-005	7.7000e-004	0.0000	1.7533	1.7533	2.0000e-005	0.0000	1.7539
Total	**3.5700e-003**	**0.0895**	**0.0366**	**4.6000e-004**	**0.0133**	**1.7000e-004**	**0.0135**	**3.6400e-003**	**1.6000e-004**	**3.8100e-003**	**0.0000**	**44.3419**	**44.3419**	**2.0700e-003**	**0.0000**	**44.3936**

3.16 Phase 2-Drainage/Utilities/Sub-Grade - 2030

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					0.2258	0.0000	0.2258	0.1241	0.0000	0.1241	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0305	0.1709	0.2037	5.8000e-004		5.4600e-003	5.4600e-003		5.4600e-003	5.4600e-003	0.0000	50.0058	50.0058	2.4700e-003	0.0000	50.0675
Total	**0.0305**	**0.1709**	**0.2037**	**5.8000e-004**	**0.2258**	**5.4600e-003**	**0.2313**	**0.1241**	**5.4600e-003**	**0.1296**	**0.0000**	**50.0058**	**50.0058**	**2.4700e-003**	**0.0000**	**50.0675**

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	4.0000e-004	2.1000e-004	2.6600e-003	1.0000e-005	1.7800e-003	1.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.0958	1.0958	1.0000e-005	0.0000	1.0962
Total	**4.0000e-004**	**2.1000e-004**	**2.6600e-003**	**1.0000e-005**	**1.7800e-003**	**1.0000e-005**	**1.7900e-003**	**4.7000e-004**	**1.0000e-005**	**4.8000e-004**	**0.0000**	**1.0958**	**1.0958**	**1.0000e-005**	**0.0000**	**1.0962**

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					0.2258	0.0000	0.2258	0.1241	0.0000	0.1241	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	0.0116	0.2383	0.2870	5.8000e-004		0.0118	0.0118		0.0118	0.0118	0.0000	50.0057	50.0057	2.4700e-003	0.0000	50.0674
Total	**0.0116**	**0.2383**	**0.2870**	**5.8000e-004**	**0.2258**	**0.0118**	**0.2377**	**0.1241**	**0.0118**	**0.1360**	**0.0000**	**50.0057**	**50.0057**	**2.4700e-003**	**0.0000**	**50.0674**

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	4.0000e-004	2.1000e-004	2.6600e-003	1.0000e-005	1.7800e-003	1.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.0958	1.0958	1.0000e-005	0.0000	1.0962
Total	**4.0000e-004**	**2.1000e-004**	**2.6600e-003**	**1.0000e-005**	**1.7800e-003**	**1.0000e-005**	**1.7900e-003**	**4.7000e-004**	**1.0000e-005**	**4.8000e-004**	**0.0000**	**1.0958**	**1.0958**	**1.0000e-005**	**0.0000**	**1.0962**

3.17 Phase 2-Foundations/Concrete Pour - 2030

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0109	0.0679	0.1447	2.8000e-004		1.3600e-003	1.3600e-003		1.3600e-003	1.3600e-003	0.0000	24.0309	24.0309	8.8000e-004	0.0000	24.0528
Total	**0.0109**	**0.0679**	**0.1447**	**2.8000e-004**	**0.0000**	**1.3600e-003**	**1.3600e-003**	**0.0000**	**1.3600e-003**	**1.3600e-003**	**0.0000**	**24.0309**	**24.0309**	**8.8000e-004**	**0.0000**	**24.0528**

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	4.3900e-003	0.1337	0.0485	6.5000e-004	0.0157	2.4000e-004	0.0160	4.3200e-003	2.3000e-004	4.5600e-003	0.0000	63.8829	63.8829	3.0700e-003	0.0000	63.9596
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	1.7000e-004	2.1300e-003	1.0000e-005	1.4200e-003	1.0000e-005	1.4300e-003	3.8000e-004	1.0000e-005	3.8000e-004	0.0000	0.8766	0.8766	1.0000e-005	0.0000	0.8769
Total	**4.7100e-003**	**0.1339**	**0.0506**	**6.6000e-004**	**0.0171**	**2.5000e-004**	**0.0174**	**4.7000e-003**	**2.4000e-004**	**4.9400e-003**	**0.0000**	**64.7595**	**64.7595**	**3.0800e-003**	**0.0000**	**64.8366**

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.5900e-003	0.1240	0.1627	2.8000e-004		8.0300e-003	8.0300e-003		8.0300e-003	8.0300e-003	0.0000	24.0308	24.0308	8.8000e-004	0.0000	24.0528
Total	**5.5900e-003**	**0.1240**	**0.1627**	**2.8000e-004**	**0.0000**	**8.0300e-003**	**8.0300e-003**	**0.0000**	**8.0300e-003**	**8.0300e-003**	**0.0000**	**24.0308**	**24.0308**	**8.8000e-004**	**0.0000**	**24.0528**

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	4.3900e-003	0.1337	0.0485	6.5000e-004	0.0157	2.4000e-004	0.0160	4.3200e-003	2.3000e-004	4.5600e-003	0.0000	63.8829	63.8829	3.0700e-003	0.0000	63.9596
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	1.7000e-004	2.1300e-003	1.0000e-005	1.4200e-003	1.0000e-005	1.4300e-003	3.8000e-004	1.0000e-005	3.8000e-004	0.0000	0.8766	0.8766	1.0000e-005	0.0000	0.8769
Total	**4.7100e-003**	**0.1339**	**0.0506**	**6.6000e-004**	**0.0171**	**2.5000e-004**	**0.0174**	**4.7000e-003**	**2.4000e-004**	**4.9400e-003**	**0.0000**	**64.7595**	**64.7595**	**3.0800e-003**	**0.0000**	**64.8366**

3.18 Phase 2-Building Construction - 2030

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	0.0985	0.5901	1.2044	2.3300e-003		0.0111	0.0111		0.0111	0.0111	0.0000	197.8990	197.8990	7.9300e-003	0.0000	198.0973
Total	**0.0985**	**0.5901**	**1.2044**	**2.3300e-003**		**0.0111**	**0.0111**		**0.0111**	**0.0111**	**0.0000**	**197.8990**	**197.8990**	**7.9300e-003**	**0.0000**	**198.0973**

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	6.1600e-003	0.1878	0.0681	9.2000e-004	0.0221	3.4000e-004	0.0224	6.0700e-003	3.3000e-004	6.4000e-003	0.0000	89.7108	89.7108	4.3100e-003	0.0000	89.8186
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0379	0.0197	0.2515	1.1400e-003	0.1682	7.5000e-004	0.1689	0.0447	6.9000e-004	0.0454	0.0000	103.6388	103.6388	1.3500e-003	0.0000	103.6725
Total	**0.0441**	**0.2075**	**0.3196**	**2.0600e-003**	**0.1902**	**1.0900e-003**	**0.1913**	**0.0508**	**1.0200e-003**	**0.0518**	**0.0000**	**193.3496**	**193.3496**	**5.6600e-003**	**0.0000**	**193.4911**

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	0.0545	1.0307	1.3469	2.3300e-003		0.0613	0.0613		0.0613	0.0613	0.0000	197.8988	197.8988	7.9300e-003	0.0000	198.0970
Total	**0.0545**	**1.0307**	**1.3469**	**2.3300e-003**		**0.0613**	**0.0613**		**0.0613**	**0.0613**	**0.0000**	**197.8988**	**197.8988**	**7.9300e-003**	**0.0000**	**198.0970**

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	6.1600e-003	0.1878	0.0681	9.2000e-004	0.0221	3.4000e-004	0.0224	6.0700e-003	3.3000e-004	6.4000e-003	0.0000	89.7108	89.7108	4.3100e-003	0.0000	89.8186
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0379	0.0197	0.2515	1.1400e-003	0.1682	7.5000e-004	0.1689	0.0447	6.9000e-004	0.0454	0.0000	103.6388	103.6388	1.3500e-003	0.0000	103.6725
Total	**0.0441**	**0.2075**	**0.3196**	**2.0600e-003**	**0.1902**	**1.0900e-003**	**0.1913**	**0.0508**	**1.0200e-003**	**0.0518**	**0.0000**	**193.3496**	**193.3496**	**5.6600e-003**	**0.0000**	**193.4911**

3.19 Phase 2-Architectural Coatings - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0519					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7400e-003	0.0114	0.0240	4.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004	0.0000	3.4043	3.4043	1.4000e-004	0.0000	3.4078
Total	**1.0536**	**0.0114**	**0.0240**	**4.0000e-005**		**2.7000e-004**	**2.7000e-004**		**2.7000e-004**	**2.7000e-004**	**0.0000**	**3.4043**	**3.4043**	**1.4000e-004**	**0.0000**	**3.4078**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-003	5.7000e-004	7.3300e-003	3.0000e-005	4.9000e-003	2.0000e-005	4.9200e-003	1.3000e-003	2.0000e-005	1.3200e-003	0.0000	3.0196	3.0196	4.0000e-005	0.0000	3.0205
Total	**1.1000e-003**	**5.7000e-004**	**7.3300e-003**	**3.0000e-005**	**4.9000e-003**	**2.0000e-005**	**4.9200e-003**	**1.3000e-003**	**2.0000e-005**	**1.3200e-003**	**0.0000**	**3.0196**	**3.0196**	**4.0000e-005**	**0.0000**	**3.0205**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0519					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	7.9000e-004	0.0181	0.0244	4.0000e-005		1.2700e-003	1.2700e-003		1.2700e-003	1.2700e-003	0.0000	3.4043	3.4043	1.4000e-004	0.0000	3.4078
Total	**1.0527**	**0.0181**	**0.0244**	**4.0000e-005**		**1.2700e-003**	**1.2700e-003**		**1.2700e-003**	**1.2700e-003**	**0.0000**	**3.4043**	**3.4043**	**1.4000e-004**	**0.0000**	**3.4078**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-003	5.7000e-004	7.3300e-003	3.0000e-005	4.9000e-003	2.0000e-005	4.9200e-003	1.3000e-003	2.0000e-005	1.3200e-003	0.0000	3.0196	3.0196	4.0000e-005	0.0000	3.0205
Total	**1.1000e-003**	**5.7000e-004**	**7.3300e-003**	**3.0000e-005**	**4.9000e-003**	**2.0000e-005**	**4.9200e-003**	**1.3000e-003**	**2.0000e-005**	**1.3200e-003**	**0.0000**	**3.0196**	**3.0196**	**4.0000e-005**	**0.0000**	**3.0205**

3.20 Phase 2-Paving - 2030

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	0.0111	0.0570	0.1268	2.2000e-004		2.6500e-003	2.6500e-003		2.6500e-003	2.6500e-003	0.0000	19.2796	19.2796	9.0000e-004	0.0000	19.3022
Paving	0.0239					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0350**	**0.0570**	**0.1268**	**2.2000e-004**		**2.6500e-003**	**2.6500e-003**		**2.6500e-003**	**2.6500e-003**	**0.0000**	**19.2796**	**19.2796**	**9.0000e-004**	**0.0000**	**19.3022**

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	8.0000e-005	2.3000e-003	8.3000e-004	1.0000e-005	3.3000e-004	0.0000	3.4000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	1.0991	1.0991	5.0000e-005	0.0000	1.1004
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	9.0000e-005	4.0000e-005	5.7000e-004	0.0000	3.8000e-004	0.0000	3.8000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.2338	0.2338	0.0000	0.0000	0.2339
Total	**1.7000e-004**	**2.3400e-003**	**1.4000e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**1.3328**	**1.3328**	**5.0000e-005**	**0.0000**	**1.3342**

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	4.4900e-003	0.0904	0.1384	2.2000e-004		4.8700e-003	4.8700e-003		4.8700e-003	4.8700e-003	0.0000	19.2796	19.2796	9.0000e-004	0.0000	19.3022
Paving	0.0239					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0284**	**0.0904**	**0.1384**	**2.2000e-004**		**4.8700e-003**	**4.8700e-003**		**4.8700e-003**	**4.8700e-003**	**0.0000**	**19.2796**	**19.2796**	**9.0000e-004**	**0.0000**	**19.3022**

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	8.0000e-005	2.3000e-003	8.3000e-004	1.0000e-005	3.3000e-004	0.0000	3.4000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	1.0991	1.0991	5.0000e-005	0.0000	1.1004
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	9.0000e-005	4.0000e-005	5.7000e-004	0.0000	3.8000e-004	0.0000	3.8000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.2338	0.2338	0.0000	0.0000	0.2339
Total	**1.7000e-004**	**2.3400e-003**	**1.4000e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**1.3328**	**1.3328**	**5.0000e-005**	**0.0000**	**1.3342**

3.20 Phase 2-Paving - 2031

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	3.4600e-003	0.0178	0.0396	7.0000e-005		8.3000e-004	8.3000e-004		8.3000e-004	8.3000e-004	0.0000	6.0249	6.0249	2.8000e-004	0.0000	6.0319
Paving	7.4700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0109**	**0.0178**	**0.0396**	**7.0000e-005**		**8.3000e-004**	**8.3000e-004**		**8.3000e-004**	**8.3000e-004**	**0.0000**	**6.0249**	**6.0249**	**2.8000e-004**	**0.0000**	**6.0319**

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	2.0000e-005	7.1000e-004	2.6000e-004	0.0000	2.9000e-004	0.0000	2.9000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.3422	0.3422	2.0000e-005	0.0000	0.3427
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	2.0000e-005	1.0000e-005	1.7000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0714	0.0714	0.0000	0.0000	0.0714
Total	**4.0000e-005**	**7.2000e-004**	**4.3000e-004**	**0.0000**	**4.1000e-004**	**0.0000**	**4.1000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.4136**	**0.4136**	**2.0000e-005**	**0.0000**	**0.4141**

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	1.4000e-003	0.0282	0.0432	7.0000e-005		1.5200e-003	1.5200e-003		1.5200e-003	1.5200e-003	0.0000	6.0249	6.0249	2.8000e-004	0.0000	6.0319
Paving	7.4700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.8700e-003**	**0.0282**	**0.0432**	**7.0000e-005**		**1.5200e-003**	**1.5200e-003**		**1.5200e-003**	**1.5200e-003**	**0.0000**	**6.0249**	**6.0249**	**2.8000e-004**	**0.0000**	**6.0319**

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	2.0000e-005	7.1000e-004	2.6000e-004	0.0000	2.9000e-004	0.0000	2.9000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.3422	0.3422	2.0000e-005	0.0000	0.3427
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	2.0000e-005	1.0000e-005	1.7000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0714	0.0714	0.0000	0.0000	0.0714
Total	**4.0000e-005**	**7.2000e-004**	**4.3000e-004**	**0.0000**	**4.1000e-004**	**0.0000**	**4.1000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.4136**	**0.4136**	**2.0000e-005**	**0.0000**	**0.4141**

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	4.7853	20.6799	45.0663	0.1278	9.9978	0.1455	10.1433	2.6839	0.1367	2.8207	0.0000	11,721.1523	11,721.1523	0.5290	0.0000	11,734.3768
Unmitigated	4.7853	20.6799	45.0663	0.1278	9.9978	0.1455	10.1433	2.6839	0.1367	2.8207	0.0000	11,721.1523	11,721.1523	0.5290	0.0000	11,734.3768

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Discount Club	6,186.40	7,955.00	4983.16	9,654,403	9,654,403
Gasoline/Service Station	3,371.20	3,371.20	3371.20	1,942,379	1,942,379
Hotel	1,887.27	1,891.89	1374.45	3,447,747	3,447,747
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Strip Mall	221.60	210.20	102.15	312,484	312,484
Strip Mall	8,156.65	7,737.04	3759.94	11,501,900	11,501,900
Total	19,823.12	21,165.33	13,590.90	26,858,912	26,858,912

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
Discount Club	9.50	7.30	7.30	16.70	64.30	19.00	45	40	15
Gasoline/Service Station	9.50	7.30	7.30	2.00	79.00	19.00	14	27	59
Hotel	9.50	7.30	7.30	19.40	61.60	19.00	58	38	4
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Discount Club	0.573139	0.040894	0.193976	0.114604	0.017740	0.005371	0.017133	0.024527	0.002545	0.002442	0.005942	0.000877	0.000812
Gasoline/Service Station	0.573139	0.040894	0.193976	0.114604	0.017740	0.005371	0.017133	0.024527	0.002545	0.002442	0.005942	0.000877	0.000812
Hotel	0.573139	0.040894	0.193976	0.114604	0.017740	0.005371	0.017133	0.024527	0.002545	0.002442	0.005942	0.000877	0.000812
Other Non-Asphalt Surfaces	0.573139	0.040894	0.193976	0.114604	0.017740	0.005371	0.017133	0.024527	0.002545	0.002442	0.005942	0.000877	0.000812
Parking Lot	0.573139	0.040894	0.193976	0.114604	0.017740	0.005371	0.017133	0.024527	0.002545	0.002442	0.005942	0.000877	0.000812
Strip Mall	0.573139	0.040894	0.193976	0.114604	0.017740	0.005371	0.017133	0.024527	0.002545	0.002442	0.005942	0.000877	0.000812

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,453.7957	1,453.7957	0.0657	0.0136	1,459.4921
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,453.7957	1,453.7957	0.0657	0.0136	1,459.4921

NaturalGas Mitigated	0.0363	0.3295	0.2768	1.9800e-003		0.0250	0.0250		0.0250	0.0250	0.0000	358.7212	358.7212	6.8800e-003	6.5800e-003	360.8529
NaturalGas Unmitigated	0.0363	0.3295	0.2768	1.9800e-003		0.0250	0.0250		0.0250	0.0250	0.0000	358.7212	358.7212	6.8800e-003	6.5800e-003	360.8529

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					
Discount Club	350760	1.8900e-003	0.0172	0.0144	1.0000e-004		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003	0.0000	18.7179	18.7179	3.6000e-004	3.4000e-004	18.8291
Gasoline/Service Station	74483.9	4.0000e-004	3.6500e-003	3.0700e-003	2.0000e-005		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004	0.0000	3.9748	3.9748	8.0000e-005	7.0000e-005	3.9984
Hotel	5.84892e+006	0.0315	0.2867	0.2408	1.7200e-003		0.0218	0.0218		0.0218	0.0218	0.0000	312.1207	312.1207	5.9800e-003	5.7200e-003	313.9754
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	11850	6.0000e-005	5.8000e-004	4.9000e-004	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.6324	0.6324	1.0000e-005	1.0000e-005	0.6361
Strip Mall	436168	2.3500e-003	0.0214	0.0180	1.3000e-004		1.6200e-003	1.6200e-003		1.6200e-003	1.6200e-003	0.0000	23.2756	23.2756	4.5000e-004	4.3000e-004	23.4139
Total		**0.0362**	**0.3295**	**0.2768**	**1.9700e-003**		**0.0250**	**0.0250**		**0.0250**	**0.0250**	**0.0000**	**358.7212**	**358.7212**	**6.8800e-003**	**6.5700e-003**	**360.8529**

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					
Discount Club	350760	1.8900e-003	0.0172	0.0144	1.0000e-004		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003	0.0000	18.7179	18.7179	3.6000e-004	3.4000e-004	18.8291

Gasoline/Service Station	74483.9	4.0000e-004	3.6500e-003	3.0700e-003	2.0000e-005		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004	0.0000	3.9748	3.9748	8.0000e-005	7.0000e-005	3.9984
Hotel	5.84892e+006	0.0315	0.2867	0.2408	1.7200e-003		0.0218	0.0218		0.0218	0.0218	0.0000	312.1207	312.1207	5.9800e-003	5.7200e-003	313.9754
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	11850	6.0000e-005	5.8000e-004	4.9000e-004	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.6324	0.6324	1.0000e-005	1.0000e-005	0.6361
Strip Mall	436168	2.3500e-003	0.0214	0.0180	1.3000e-004		1.6200e-003	1.6200e-003		1.6200e-003	1.6200e-003	0.0000	23.2756	23.2756	4.5000e-004	4.3000e-004	23.4139
Total		**0.0362**	**0.3295**	**0.2768**	**1.9700e-003**		**0.0250**	**0.0250**		**0.0250**	**0.0250**	**0.0000**	**358.7212**	**358.7212**	**6.8800e-003**	**6.5700e-003**	**360.8529**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Discount Club	1.58212e+006	460.2569	0.0208	4.3100e-003	462.0603
Gasoline/Service Station	23322.1	6.7847	3.1000e-004	6.0000e-005	6.8113
Hotel	1.00584e+006	292.6104	0.0132	2.7400e-003	293.7569
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	157034	45.6829	2.0700e-003	4.3000e-004	45.8619
Parking Lot	160083	46.5700	2.1100e-003	4.4000e-004	46.7525
Parking Lot	48177.4	14.0154	6.3000e-004	1.3000e-004	14.0703
Strip Mall	1.96736e+006	572.3263	0.0259	5.3500e-003	574.5688
Strip Mall	53450	15.5492	7.0000e-004	1.5000e-004	15.6101
Total		**1,453.7957**	**0.0657**	**0.0136**	**1,459.4921**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Discount Club	1.58212e+006	460.2569	0.0208	4.3100e-003	462.0603
Gasoline/Service Station	23322.1	6.7847	3.1000e-004	6.0000e-005	6.8113
Hotel	1.00584e+006	292.6104	0.0132	2.7400e-003	293.7569
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	157034	45.6829	2.0700e-003	4.3000e-004	45.8619
Parking Lot	160083	46.5700	2.1100e-003	4.4000e-004	46.7525
Parking Lot	48177.4	14.0154	6.3000e-004	1.3000e-004	14.0703
Strip Mall	1.96736e+006	572.3263	0.0259	5.3500e-003	574.5688
Strip Mall	53450	15.5492	7.0000e-004	1.5000e-004	15.6101
Total		**1,453.7957**	**0.0657**	**0.0136**	**1,459.4921**

6.0 Area Detail

6.1 Mitigation Measures Area

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

Category	tons/yr										MT/yr					
Mitigated	2.2063	5.0000e-005	5.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0111	0.0111	3.0000e-005	0.0000	0.0118
Unmitigated	2.2063	5.0000e-005	5.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0111	0.0111	3.0000e-005	0.0000	0.0118

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	0.2746					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9312					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.4000e-004	5.0000e-005	5.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0111	0.0111	3.0000e-005	0.0000	0.0118
Total	**2.2063**	**5.0000e-005**	**5.7300e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0111**	**0.0111**	**3.0000e-005**	**0.0000**	**0.0118**

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	0.2746					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9312					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.4000e-004	5.0000e-005	5.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0111	0.0111	3.0000e-005	0.0000	0.0118

Total	**2.2063**	**5.0000e-005**	**5.7300e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0111**	**0.0111**	**3.0000e-005**	**0.0000**	**0.0118**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	75.2127	1.0161	0.0245	107.9247
Unmitigated	75.2127	1.0161	0.0245	107.9247

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Discount Club	10.9627 / 6.71909	27.5760	0.3583	8.6600e-003	39.1145
Gasoline/Service Station	0.265638 / 0.16281	0.6682	8.6800e-003	2.1000e-004	0.9478
Hotel	5.85972 / 0.65108	11.7459	0.1914	4.6000e-003	17.9016
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000

Strip Mall	14.0027 / 8.58228	35.2227	0.4577	0.0111	49.9608
Total		**75.2127**	**1.0161**	**0.0245**	**107.9247**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Discount Club	10.9627 / 6.71909	27.5760	0.3583	8.6600e-003	39.1145
Gasoline/Service Station	0.265638 / 0.16281	0.6682	8.6800e-003	2.1000e-004	0.9478
Hotel	5.85972 / 0.65108	11.7459	0.1914	4.6000e-003	17.9016
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	14.0027 / 8.58228	35.2227	0.4577	0.0111	49.9608
Total		**75.2127**	**1.0161**	**0.0245**	**107.9247**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e

	MT/yr			
Mitigated	197.3559	11.6634	0.0000	488.9410
Unmitigated	197.3559	11.6634	0.0000	488.9410

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Discount Club	636.5	129.2038	7.6357	0.0000	320.0968
Gasoline/Service Station	10.78	2.1882	0.1293	0.0000	5.4213
Hotel	126.47	25.6723	1.5172	0.0000	63.6020
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	198.49	40.2917	2.3812	0.0000	99.8209
Total		**197.3559**	**11.6634**	**0.0000**	**488.9410**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			

Discount Club	636.5	129.2038	7.6357	0.0000	320.0968
Gasoline/Service Station	10.78	2.1882	0.1293	0.0000	5.4213
Hotel	126.47	25.6723	1.5172	0.0000	63.6020
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	198.49	40.2917	2.3812	0.0000	99.8209
Total		**197.3559**	**11.6634**	**0.0000**	**488.9410**

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

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Construction Haul Truck Idling Emissions

Construction Haul/Vendor Truck GHG Idling Emissions

CO_2	CH_4	N_2O	MT/g
	GWP[1]		0.000001
1	25	298	

Phase 1	First Year of Construction	Total One-Way Truck Trips	Trucks Idling Onsite	Idling Time per truck (min/truck)	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	$MTCO_2e$
					HHDT Idling EF (g/min)[2,3]			Emissions (MT)			
Phase 1A-Grading/Excavation	2020	800	400	15	103.26	1.86E-03	7.13E-02	6.20E-01	1.12E-05	4.28E-04	1
Phase 1A-Drainage/Utilities/Sub-Grade	2020	0	0	15	103.26	1.86E-03	7.13E-02	0.00E+00	0.00E+00	0.00E+00	0
Phase 1A-Foundations/Concrete Pour	2020	1,200	600	15	103.26	1.86E-03	7.13E-02	9.29E-01	1.67E-05	6.42E-04	1
Phase 1A-Building Construction	2020	2,100	1050	15	103.26	1.86E-03	7.13E-02	1.63E+00	2.93E-05	1.12E-03	2
Phase 1A-Architectural Coatings	2020	0	0	15	103.26	1.86E-03	7.13E-02	0.00E+00	0.00E+00	0.00E+00	0
Phase 1A-Paving	2020	14	7	15	103.26	1.86E-03	7.13E-02	1.08E-02	1.95E-07	7.49E-06	0
Phase 1B-Grading/Excavation	2020	680	340	15	103.26	1.86E-03	7.13E-02	5.27E-01	9.49E-06	3.64E-04	1
Phase 1B-Drainage/Utilities/Sub-Grade	2020	0	0	15	103.26	1.86E-03	7.13E-02	0.00E+00	0.00E+00	0.00E+00	0
Phase 1B-Foundations/Concrete Pour	2020	1,020	510	15	103.26	1.86E-03	7.13E-02	7.90E-01	1.42E-05	5.46E-04	1
Phase 1B-Building Construction	2020	1,944	972	15	103.26	1.86E-03	7.13E-02	1.51E+00	2.71E-05	1.04E-03	2
Phase 1B-Architectural Coatings	2021	0	0	15	101.79	1.85E-03	7.20E-02	0.00E+00	0.00E+00	0.00E+00	0
Phase 1B-Paving	2021	22	11	15	101.79	1.85E-03	7.20E-02	1.68E-02	3.05E-07	1.19E-05	0
										Phase 1 Total	**7**

Phase 2	Year	Total One-Way Truck Trips	Trucks Idling Onsite	Idling Time per truck (min/truck)	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	$MTCO_2e$
					HHDT Idling EF (g/min)			Emissions (MT)			
Phase 2-Demolition	2030	0	0	15	85.55	1.82E-03	6.13E-02	0.00E+00	0.00E+00	0.00E+00	0
Phase 2-Grading/Excavation	2030	1,240	620	15	85.55	1.82E-03	6.13E-02	7.96E-01	1.70E-05	5.70E-04	1
Phase 2-Drainage/Utilities/Sub-Grade	2030	0	0	15	85.55	1.82E-03	6.13E-02	0.00E+00	0.00E+00	0.00E+00	0
Phase 2-Foundations/Concrete Pour	2030	1,860	930	15	85.55	1.82E-03	6.13E-02	1.19E+00	2.54E-05	8.55E-04	1
Phase 2-Building Construction	2030	2,612	1306	15	85.55	1.82E-03	6.13E-02	1.68E+00	3.57E-05	1.20E-03	2
Phase 2-Architectural Coatings	2030	0	0	15	85.55	1.82E-03	6.13E-02	0.00E+00	0.00E+00	0.00E+00	0
Phase 2-Paving	2030	42	21	15	85.55	1.82E-03	6.13E-02	2.69E-02	5.74E-07	1.93E-05	0
										Phase 2 Total	**4**

Notes:

1. Global Warming Potentials (GWP) based on IPCC AR4, https://www.arb.ca.gov/cc/inventory/background/gwp.htm
2. CO2 and CH4 values from EMFAC2017 desktop version
3. N2O value from EMFAC2017 Web Database

fuel	Dsl
vehicle_class	HHDT
process	IDLEX

Average of emission_rate	Column Labels	
Row Labels	**CH4**	**CO2**
2020	0.111609216	6195.390451
2021	0.110952247	6107.47346
2030	0.109365095	5133.044007
Grand Total	**0.110642186**	**5811.969306**

HHDT Idling Emission Factors

Year	CO_2 g/hr	CH_4 g/hr
2020	6.20E+03	1.12E-01
2021	6.11E+03	1.11E-01
2030	5.13E+03	1.09E-01

Year	CO_2 g/min	CH_4 g/min
2020	1.03E+02	1.86E-03
2021	1.02E+02	1.85E-03
2030	8.56E+01	1.82E-03

Vehicle Category	HHDT
Fuel	DSL

Row Labels	Sum of N2O_IDLEX
2020	1.782734578
2021	1.799464973
2030	1.532560843
2031	1.505758778
Grand Total	**6.620519172**

HHDT Idling Emission Factors

HHDT-DSL Year	N_2O IdleEx g/veh/day
2020	1.78
2021	1.80
2030	1.53
2031	1.51

HHDT-DSL Year	N_2O IdleEx g/min
2020	0.0713
2021	0.0720
2030	0.0613
2031	0.0602

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Construction Emissions Summary

Construction GHG Emissions

Construction Phase	Year	CalEEMod Output (exluding Idling Emissions)	GHG Idling Emissions
		$MTCO_2e$	
Phase 1	2020	1,149	7
	2021	107	
	Total	**1,264**	
30-Year Amortization		**42**	
Phase 2	2030	788	4
	2031	6	
	Total	**799**	
Project Construction Total (Phase 1 + Phase 2)		2,062	
30-Year Amortization		**69**	

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Emission Calculations
Operational Emissions

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CalEEMod Output – Phase 1 (2021)

Johnson Drive- Phase 1 Operations-2021 - Bay Area AQMD Air District, Annual

Johnson Drive- Phase 1 Operations-2021

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	3.40	Acre	3.40	148,104.00	0
Other Non-Asphalt Surfaces	1.22	Acre	1.22	53,143.20	0
Parking Lot	10.30	Acre	10.30	448,668.00	0
Parking Lot	3.16	Acre	3.16	137,649.60	0
Hotel	231.00	Room	0.77	132,000.00	0
Discount Club	148.00	1000sqft	3.40	148,000.00	0
Gasoline/Service Station	20.00	Pump	0.06	2,823.50	0
Strip Mall	5.00	1000sqft	0.11	5,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	4			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	293.67	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E's 2016 CO2 emission factor based on The Climate Registry's 2018 Emissions Factor Report

Land Use - Project Specific Information

Consumer Products - Consumer product emissions only associated with hotel land use

Area Coating - Coating only applied to parking lot asphalt surfaces

Energy Use - CalEEmod default 2016 T24 energy rates adjusted to represent 2019 T24 energy rates.

Area Mitigation - Low VOC-Paints, 10g VOC/liter

Fleet Mix - Light duty vehicle categories consistent with HRA

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	47254	34006
tblAreaMitigation	UseLowVOCPaintNonresidentialExterior Value	150	10
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorV alue	100	10
tblAreaMitigation	UseLowVOCPaintResidentialExteriorVal ue	150	10
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValu e	100	10
tblConsumerProducts	ROG_EF	2.14E-05	9.8E-06
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblConsumerProducts	ROG_EF_PesticidesFertilizers	5.152E-08	0
tblEnergyUse	LightingElect	5.25	11.98
tblEnergyUse	LightingElect	3.08	2.16
tblEnergyUse	LightingElect	2.35	1.65
tblEnergyUse	LightingElect	0.35	0.25
tblEnergyUse	LightingElect	5.25	3.67
tblEnergyUse	NT24E	2.68	8.75
tblEnergyUse	T24E	2.76	6.30
tblEnergyUse	T24E	1.48	1.04
tblEnergyUse	T24E	2.05	1.44
tblEnergyUse	T24E	2.76	1.93
tblEnergyUse	T24NG	2.37	1.66
tblEnergyUse	T24NG	19.71	13.80

tblEnergyUse	T24NG	39.56	27.69
tblEnergyUse	T24NG	2.37	1.66
tblFleetMix	HHD	0.03	0.00
tblFleetMix	HHD	0.03	0.00
tblFleetMix	HHD	0.03	0.00
tblFleetMix	HHD	0.03	0.00
tblFleetMix	HHD	0.03	0.00
tblFleetMix	HHD	0.03	0.00
tblFleetMix	LDA	0.58	0.60
tblFleetMix	LDA	0.58	0.60
tblFleetMix	LDA	0.58	0.60
tblFleetMix	LDA	0.58	0.60
tblFleetMix	LDA	0.58	0.60
tblFleetMix	LDA	0.58	0.60
tblFleetMix	LDT1	0.04	0.04
tblFleetMix	LDT1	0.04	0.04
tblFleetMix	LDT1	0.04	0.04
tblFleetMix	LDT1	0.04	0.04
tblFleetMix	LDT1	0.04	0.04
tblFleetMix	LDT1	0.04	0.04
tblFleetMix	LDT2	0.19	0.20
tblFleetMix	LDT2	0.19	0.20
tblFleetMix	LDT2	0.19	0.20
tblFleetMix	LDT2	0.19	0.20
tblFleetMix	LDT2	0.19	0.20
tblFleetMix	LDT2	0.19	0.20
tblFleetMix	LHD1	0.02	0.01
tblFleetMix	LHD1	0.02	0.01
tblFleetMix	LHD1	0.02	0.01
tblFleetMix	LHD1	0.02	0.01

tblFleetMix	LHD1	0.02	0.01
tblFleetMix	LHD1	0.02	0.01
tblFleetMix	LHD2	5.3610e-003	5.4310e-003
tblFleetMix	LHD2	5.3610e-003	5.4310e-003
tblFleetMix	LHD2	5.3610e-003	5.4310e-003
tblFleetMix	LHD2	5.3610e-003	5.4310e-003
tblFleetMix	LHD2	5.3610e-003	5.4310e-003
tblFleetMix	LHD2	5.3610e-003	5.4310e-003
tblFleetMix	MCY	5.9040e-003	5.7730e-003
tblFleetMix	MCY	5.9040e-003	5.7730e-003
tblFleetMix	MCY	5.9040e-003	5.7730e-003
tblFleetMix	MCY	5.9040e-003	5.7730e-003
tblFleetMix	MCY	5.9040e-003	5.7730e-003
tblFleetMix	MCY	5.9040e-003	5.7730e-003
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MH	7.8900e-004	6.9200e-004
tblFleetMix	MH	7.8900e-004	6.9200e-004
tblFleetMix	MH	7.8900e-004	6.9200e-004
tblFleetMix	MH	7.8900e-004	6.9200e-004
tblFleetMix	MH	7.8900e-004	6.9200e-004
tblFleetMix	MH	7.8900e-004	6.9200e-004
tblFleetMix	MHD	0.02	0.02
tblFleetMix	MHD	0.02	0.02
tblFleetMix	MHD	0.02	0.02
tblFleetMix	MHD	0.02	0.02

tblFleetMix	MHD	0.02	0.02
tblFleetMix	MHD	0.02	0.02
tblFleetMix	OBUS	2.5810e-003	2.7880e-003
tblFleetMix	OBUS	2.5810e-003	2.7880e-003
tblFleetMix	OBUS	2.5810e-003	2.7880e-003
tblFleetMix	OBUS	2.5810e-003	2.7880e-003
tblFleetMix	OBUS	2.5810e-003	2.7880e-003
tblFleetMix	OBUS	2.5810e-003	2.7880e-003
tblFleetMix	SBUS	8.8100e-004	9.5100e-004
tblFleetMix	SBUS	8.8100e-004	9.5100e-004
tblFleetMix	SBUS	8.8100e-004	9.5100e-004
tblFleetMix	SBUS	8.8100e-004	9.5100e-004
tblFleetMix	SBUS	8.8100e-004	9.5100e-004
tblFleetMix	SBUS	8.8100e-004	9.5100e-004
tblFleetMix	UBUS	2.3490e-003	1.8130e-003
tblFleetMix	UBUS	2.3490e-003	1.8130e-003
tblFleetMix	UBUS	2.3490e-003	1.8130e-003
tblFleetMix	UBUS	2.3490e-003	1.8130e-003
tblFleetMix	UBUS	2.3490e-003	1.8130e-003
tblFleetMix	UBUS	2.3490e-003	1.8130e-003
tblLandUse	LandUseSquareFeet	335,412.00	132,000.00
tblLandUse	LotAcreage	7.70	0.77
tblProjectCharacteristics	CO2IntensityFactor	641.35	293.67
tblVehicleTrips	DV_TP	40.00	0.00
tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	38.00	0.00
tblVehicleTrips	DV_TP	40.00	0.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PB_TP	59.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00

tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PR_TP	45.00	100.00
tblVehicleTrips	PR_TP	14.00	100.00
tblVehicleTrips	PR_TP	58.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	PR_TP	45.00	100.00
tblVehicleTrips	ST_TR	53.75	59.80
tblVehicleTrips	ST_TR	168.56	0.00
tblVehicleTrips	ST_TR	8.19	7.99
tblVehicleTrips	ST_TR	42.04	34.89
tblVehicleTrips	SU_TR	33.67	59.80
tblVehicleTrips	SU_TR	168.56	0.00
tblVehicleTrips	SU_TR	5.95	7.99
tblVehicleTrips	SU_TR	20.43	34.89
tblVehicleTrips	WD_TR	41.80	47.03
tblVehicleTrips	WD_TR	168.56	0.00
tblVehicleTrips	WD_TR	8.17	7.99
tblVehicleTrips	WD_TR	44.32	29.82
tblWater	IndoorWaterUseRate	10,962,733.18	4,000,000.00
tblWater	OutdoorWaterUseRate	6,719,094.53	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.6770	4.0000e-005	3.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	7.5400e-003	7.5400e-003	2.0000e-005	0.0000	8.0400e-003
Energy	0.0248	0.2252	0.1892	1.3500e-003		0.0171	0.0171		0.0171	0.0171	0.0000	916.6158	916.6158	0.0710	0.0182	923.8185
Mobile	2.5389	6.6279	31.8894	0.1025	9.8431	0.0885	9.9316	2.6389	0.0825	2.7214	0.0000	9,317.0490	9,317.0490	0.2829	0.0000	9,324.1211
Waste						0.0000	0.0000		0.0000	0.0000	158.1300	0.0000	158.1300	9.3452	0.0000	391.7603
Water						0.0000	0.0000		0.0000	0.0000	3.3298	8.0504	11.3802	0.3428	8.2400e-003	22.4057
Total	**3.2407**	**6.8531**	**32.0824**	**0.1039**	**9.8431**	**0.1056**	**9.9487**	**2.6389**	**0.0997**	**2.7385**	**161.4598**	**10,241.7227**	**10,403.1825**	**10.0419**	**0.0265**	**10,662.1135**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5403	4.0000e-005	3.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	7.5400e-003	7.5400e-003	2.0000e-005	0.0000	8.0400e-003
Energy	0.0248	0.2252	0.1892	1.3500e-003		0.0171	0.0171		0.0171	0.0171	0.0000	916.6158	916.6158	0.0710	0.0182	923.8185
Mobile	2.5389	6.6279	31.8894	0.1025	9.8431	0.0885	9.9316	2.6389	0.0825	2.7214	0.0000	9,317.0490	9,317.0490	0.2829	0.0000	9,324.1211
Waste						0.0000	0.0000		0.0000	0.0000	158.1300	0.0000	158.1300	9.3452	0.0000	391.7603
Water						0.0000	0.0000		0.0000	0.0000	3.3298	8.0504	11.3802	0.3428	8.2400e-003	22.4057
Total	**3.1040**	**6.8531**	**32.0824**	**0.1039**	**9.8431**	**0.1056**	**9.9487**	**2.6389**	**0.0997**	**2.7385**	**161.4598**	**10,241.7227**	**10,403.1825**	**10.0419**	**0.0265**	**10,662.1135**

	ROG	NOx	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	**4.22**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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	2.5389	6.6279	31.8894	0.1025	9.8431	0.0885	9.9316	2.6389	0.0825	2.7214	0.0000	9,317.0490	9,317.0490	0.2829	0.0000	9,324.1211
Unmitigated	2.5389	6.6279	31.8894	0.1025	9.8431	0.0885	9.9316	2.6389	0.0825	2.7214	0.0000	9,317.0490	9,317.0490	0.2829	0.0000	9,324.1211

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Discount Club	6,960.44	8,850.40	8850.40	20,933,198	20,933,198
Gasoline/Service Station	0.00	0.00	0.00		
Hotel	1,845.69	1,845.69	1845.69	5,191,105	5,191,105
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Strip Mall	149.10	174.45	174.45	436,217	436,217
Total	8,955.23	10,870.54	10,870.54	26,560,520	26,560,520

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-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Discount Club	9.50	7.30	7.30	16.70	64.30	19.00	100	0	0
Gasoline/Service Station	9.50	7.30	7.30	2.00	79.00	19.00	100	0	0
Hotel	9.50	7.30	7.30	19.40	61.60	19.00	100	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	100	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	100	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	100	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	100	0	0
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Discount Club	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0.000000	0.002788	0.001813	0.005773	0.000951	0.000692
Gasoline/Service Station	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0.000000	0.002788	0.001813	0.005773	0.000951	0.000692
Hotel	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0.000000	0.002788	0.001813	0.005773	0.000951	0.000692
Other Non-Asphalt Surfaces	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0.000000	0.002788	0.001813	0.005773	0.000951	0.000692
Parking Lot	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0.000000	0.002788	0.001813	0.005773	0.000951	0.000692
Strip Mall	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0.000000	0.002788	0.001813	0.005773	0.000951	0.000692

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	671.4701	671.4701	0.0663	0.0137	677.2160
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	671.4701	671.4701	0.0663	0.0137	677.2160
NaturalGas Mitigated	0.0248	0.2252	0.1892	1.3500e-003		0.0171	0.0171		0.0171	0.0171	0.0000	245.1457	245.1457	4.7000e-003	4.4900e-003	246.6025
NaturalGas Unmitigated	0.0248	0.2252	0.1892	1.3500e-003		0.0171	0.0171		0.0171	0.0171	0.0000	245.1457	245.1457	4.7000e-003	4.4900e-003	246.6025

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					
Discount Club	245680	1.3200e-003	0.0120	0.0101	7.0000e-005		9.2000e-004	9.2000e-004		9.2000e-004	9.2000e-004	0.0000	13.1104	13.1104	2.5000e-004	2.4000e-004	13.1883
Gasoline/Service Station	57797	3.1000e-004	2.8300e-003	2.3800e-003	2.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	3.0843	3.0843	6.0000e-005	6.0000e-005	3.1026
Hotel	4.28208e+006	0.0231	0.2099	0.1763	1.2600e-003		0.0160	0.0160		0.0160	0.0160	0.0000	228.5081	228.5081	4.3800e-003	4.1900e-003	229.8660
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	8300	4.0000e-005	4.1000e-004	3.4000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.4429	0.4429	1.0000e-005	1.0000e-005	0.4456
Total		**0.0248**	**0.2252**	**0.1892**	**1.3500e-003**		**0.0171**	**0.0171**		**0.0171**	**0.0171**	**0.0000**	**245.1457**	**245.1457**	**4.7000e-003**	**4.5000e-003**	**246.6025**

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					
Discount Club	245680	1.3200e-003	0.0120	0.0101	7.0000e-005		9.2000e-004	9.2000e-004		9.2000e-004	9.2000e-004	0.0000	13.1104	13.1104	2.5000e-004	2.4000e-004	13.1883
Gasoline/Service Station	57797	3.1000e-004	2.8300e-003	2.3800e-003	2.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	3.0843	3.0843	6.0000e-005	6.0000e-005	3.1026
Hotel	4.28208e+006	0.0231	0.2099	0.1763	1.2600e-003		0.0160	0.0160		0.0160	0.0160	0.0000	228.5081	228.5081	4.3800e-003	4.1900e-003	229.8660
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	8300	4.0000e-005	4.1000e-004	3.4000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.4429	0.4429	1.0000e-005	1.0000e-005	0.4456
Total		**0.0248**	**0.2252**	**0.1892**	**1.3500e-003**		**0.0171**	**0.0171**		**0.0171**	**0.0171**	**0.0000**	**245.1457**	**245.1457**	**4.7000e-003**	**4.5000e-003**	**246.6025**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Discount Club	4.00044e+006	532.8845	0.0526	0.0109	537.4445
Gasoline/Service Station	19482.2	2.5952	2.6000e-004	5.0000e-005	2.6174
Hotel	832920	110.9503	0.0110	2.2700e-003	111.8998
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	112167	14.9414	1.4800e-003	3.1000e-004	15.0692
Parking Lot	34412.4	4.5840	4.5000e-004	9.0000e-005	4.6232
Strip Mall	41400	5.5148	5.4000e-004	1.1000e-004	5.5619
Total		**671.4701**	**0.0663**	**0.0137**	**677.2160**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Discount Club	4.00044e+006	532.8845	0.0526	0.0109	537.4445
Gasoline/Service Station	19482.2	2.5952	2.6000e-004	5.0000e-005	2.6174
Hotel	832920	110.9503	0.0110	2.2700e-003	111.8998
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	112167	14.9414	1.4800e-003	3.1000e-004	15.0692
Parking Lot	34412.4	4.5840	4.5000e-004	9.0000e-005	4.6232
Strip Mall	41400	5.5148	5.4000e-004	1.1000e-004	5.5619
Total		**671.4701**	**0.0663**	**0.0137**	**677.2160**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	ROG	NOx	CO	SO2	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	0.5403	4.0000e-005	3.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	7.5400e-003	7.5400e-003	2.0000e-005	0.0000	8.0400e-003
Unmitigated	0.6770	4.0000e-005	3.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	7.5400e-003	7.5400e-003	2.0000e-005	0.0000	8.0400e-003

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	0.1619					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5148					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.6000e-004	4.0000e-005	3.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	7.5400e-003	7.5400e-003	2.0000e-005	0.0000	8.0400e-003
Total	**0.6770**	**4.0000e-005**	**3.8900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**7.5400e-003**	**7.5400e-003**	**2.0000e-005**	**0.0000**	**8.0400e-003**

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	0.0252					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5148					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.6000e-004	4.0000e-005	3.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	7.5400e-003	7.5400e-003	2.0000e-005	0.0000	8.0400e-003
Total	**0.5403**	**4.0000e-005**	**3.8900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**7.5400e-003**	**7.5400e-003**	**2.0000e-005**	**0.0000**	**8.0400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	11.3802	0.3428	8.2400e-003	22.4057
Unmitigated	11.3802	0.3428	8.2400e-003	22.4057

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Discount Club	4 / 0	4.1521	0.1306	3.1400e-003	8.3524
Gasoline/Service Station	0.265638 / 0.16281	0.3517	8.6800e-003	2.1000e-004	0.6312
Hotel	5.85972 / 0.65108	6.3861	0.1914	4.6000e-003	12.5419
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.370363 / 0.226996	0.4903	0.0121	2.9000e-004	0.8801
Total		**11.3802**	**0.3428**	**8.2400e-003**	**22.4057**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Discount Club	4 / 0	4.1521	0.1306	3.1400e-003	8.3524
Gasoline/Service Station	0.265638 / 0.16281	0.3517	8.6800e-003	2.1000e-004	0.6312
Hotel	5.85972 / 0.65108	6.3861	0.1914	4.6000e-003	12.5419
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.370363 / 0.226996	0.4903	0.0121	2.9000e-004	0.8801
Total		**11.3802**	**0.3428**	**8.2400e-003**	**22.4057**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	158.1300	9.3452	0.0000	391.7603
Unmitigated	158.1300	9.3452	0.0000	391.7603

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Discount Club	636.5	129.2038	7.6357	0.0000	320.0968
Gasoline/Service Station	10.78	2.1882	0.1293	0.0000	5.4213
Hotel	126.47	25.6723	1.5172	0.0000	63.6020
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	5.25	1.0657	0.0630	0.0000	2.6402
Total		**158.1300**	**9.3452**	**0.0000**	**391.7603**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Discount Club	636.5	129.2038	7.6357	0.0000	320.0968
Gasoline/Service Station	10.78	2.1882	0.1293	0.0000	5.4213
Hotel	126.47	25.6723	1.5172	0.0000	63.6020
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	5.25	1.0657	0.0630	0.0000	2.6402
Total		**158.1300**	**9.3452**	**0.0000**	**391.7603**

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

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CalEEMod Output – Full-Buildout 1 (2031)

Johnson Drive- Full Buildout Operations - Bay Area AQMD Air District, Annual

Johnson Drive- Full Buildout Operations

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	3.40	Acre	3.40	148,104.00	0
Other Non-Asphalt Surfaces	1.22	Acre	1.22	53,143.20	0
Other Non-Asphalt Surfaces	2.80	Acre	2.80	121,968.00	0
Parking Lot	10.30	Acre	10.30	448,668.00	0
Parking Lot	3.16	Acre	3.16	137,649.60	0
Parking Lot	10.50	Acre	10.50	457,380.00	0
Hotel	231.00	Room	0.77	132,000.00	0
Discount Club	148.00	1000sqft	3.40	148,000.00	0
Gasoline/Service Station	20.00	Pump	0.06	2,823.50	0
Strip Mall	5.00	1000sqft	0.11	5,000.00	0
Strip Mall	184.04	1000sqft	4.22	184,037.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	4			**Operational Year**	2031
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	276.04	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 emission factor modified to reflect PG&E's 2030 RPS

Land Use - Project Specific Information

Consumer Products - Consumer product emissions only associated with hotel land use

Area Coating - Coating only applied to parking lot asphalt surfaces

Energy Use - CalEEmod default 2016 T24 energy rates adjusted to represent 2019 T24 energy rates.

Area Mitigation - Low VOC-Paints, 10g VOC/liter

Fleet Mix - Light duty vehicle categories consistent with HRA

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	82015	60534
tblAreaMitigation	UseLowVOCPaintNonresidentialExterior Value	150	10
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorV alue	100	10
tblAreaMitigation	UseLowVOCPaintResidentialExteriorVal ue	150	10
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValu e	100	10
tblConsumerProducts	ROG_EF	2.14E-05	6E-06
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblConsumerProducts	ROG_EF_PesticidesFertilizers	5.152E-08	0
tblEnergyUse	LightingElect	5.25	11.98
tblEnergyUse	LightingElect	3.08	2.16
tblEnergyUse	LightingElect	2.35	1.65
tblEnergyUse	LightingElect	0.35	0.25
tblEnergyUse	LightingElect	5.25	3.67
tblEnergyUse	NT24E	2.68	8.75
tblEnergyUse	T24E	2.76	6.30
tblEnergyUse	T24E	1.48	1.04
tblEnergyUse	T24E	2.05	1.44
tblEnergyUse	T24E	2.76	1.93
tblEnergyUse	T24NG	2.37	1.66
tblEnergyUse	T24NG	19.71	13.80

tblEnergyUse	T24NG	39.56	27.69
tblEnergyUse	T24NG	2.37	1.66
tblFleetMix	HHD	0.03	0.00
tblFleetMix	HHD	0.03	0.00
tblFleetMix	HHD	0.03	0.00
tblFleetMix	HHD	0.03	0.00
tblFleetMix	HHD	0.03	0.00
tblFleetMix	HHD	0.03	0.00
tblFleetMix	LDA	0.59	0.60
tblFleetMix	LDA	0.59	0.60
tblFleetMix	LDA	0.59	0.60
tblFleetMix	LDA	0.59	0.60
tblFleetMix	LDA	0.59	0.60
tblFleetMix	LDA	0.59	0.60
tblFleetMix	LDT1	0.04	0.04
tblFleetMix	LDT1	0.04	0.04
tblFleetMix	LDT1	0.04	0.04
tblFleetMix	LDT1	0.04	0.04
tblFleetMix	LDT1	0.04	0.04
tblFleetMix	LDT1	0.04	0.04
tblFleetMix	LDT2	0.19	0.20
tblFleetMix	LDT2	0.19	0.20
tblFleetMix	LDT2	0.19	0.20
tblFleetMix	LDT2	0.19	0.20
tblFleetMix	LDT2	0.19	0.20
tblFleetMix	LDT2	0.19	0.20
tblFleetMix	LHD1	0.01	0.01
tblFleetMix	LHD1	0.01	0.01
tblFleetMix	LHD1	0.01	0.01
tblFleetMix	LHD1	0.01	0.01

tblFleetMix	LHD1	0.01	0.01
tblFleetMix	LHD1	0.01	0.01
tblFleetMix	LHD2	5.2750e-003	5.4310e-003
tblFleetMix	LHD2	5.2750e-003	5.4310e-003
tblFleetMix	LHD2	5.2750e-003	5.4310e-003
tblFleetMix	LHD2	5.2750e-003	5.4310e-003
tblFleetMix	LHD2	5.2750e-003	5.4310e-003
tblFleetMix	LHD2	5.2750e-003	5.4310e-003
tblFleetMix	MCY	5.6080e-003	5.7730e-003
tblFleetMix	MCY	5.6080e-003	5.7730e-003
tblFleetMix	MCY	5.6080e-003	5.7730e-003
tblFleetMix	MCY	5.6080e-003	5.7730e-003
tblFleetMix	MCY	5.6080e-003	5.7730e-003
tblFleetMix	MCY	5.6080e-003	5.7730e-003
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MH	6.7200e-004	6.9200e-004
tblFleetMix	MH	6.7200e-004	6.9200e-004
tblFleetMix	MH	6.7200e-004	6.9200e-004
tblFleetMix	MH	6.7200e-004	6.9200e-004
tblFleetMix	MH	6.7200e-004	6.9200e-004
tblFleetMix	MH	6.7200e-004	6.9200e-004
tblFleetMix	MHD	0.02	0.02
tblFleetMix	MHD	0.02	0.02
tblFleetMix	MHD	0.02	0.02
tblFleetMix	MHD	0.02	0.02

tblFleetMix	MHD	0.02	0.02
tblFleetMix	MHD	0.02	0.02
tblFleetMix	OBUS	2.7080e-003	2.7880e-003
tblFleetMix	OBUS	2.7080e-003	2.7880e-003
tblFleetMix	OBUS	2.7080e-003	2.7880e-003
tblFleetMix	OBUS	2.7080e-003	2.7880e-003
tblFleetMix	OBUS	2.7080e-003	2.7880e-003
tblFleetMix	OBUS	2.7080e-003	2.7880e-003
tblFleetMix	SBUS	9.2400e-004	9.5100e-004
tblFleetMix	SBUS	9.2400e-004	9.5100e-004
tblFleetMix	SBUS	9.2400e-004	9.5100e-004
tblFleetMix	SBUS	9.2400e-004	9.5100e-004
tblFleetMix	SBUS	9.2400e-004	9.5100e-004
tblFleetMix	SBUS	9.2400e-004	9.5100e-004
tblFleetMix	UBUS	1.7610e-003	1.8130e-003
tblFleetMix	UBUS	1.7610e-003	1.8130e-003
tblFleetMix	UBUS	1.7610e-003	1.8130e-003
tblFleetMix	UBUS	1.7610e-003	1.8130e-003
tblFleetMix	UBUS	1.7610e-003	1.8130e-003
tblFleetMix	UBUS	1.7610e-003	1.8130e-003
tblLandUse	LandUseSquareFeet	335,412.00	132,000.00
tblLandUse	LandUseSquareFeet	184,040.00	184,037.00
tblLandUse	LotAcreage	7.70	0.77
tblProjectCharacteristics	CO2IntensityFactor	641.35	276.04
tblVehicleTrips	DV_TP	40.00	0.00
tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	38.00	0.00
tblVehicleTrips	DV_TP	40.00	0.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PB_TP	59.00	0.00

tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PR_TP	45.00	100.00
tblVehicleTrips	PR_TP	14.00	100.00
tblVehicleTrips	PR_TP	58.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	PR_TP	45.00	100.00
tblVehicleTrips	ST_TR	53.75	59.80
tblVehicleTrips	ST_TR	168.56	0.00
tblVehicleTrips	ST_TR	8.19	7.99
tblVehicleTrips	ST_TR	42.04	34.94
tblVehicleTrips	SU_TR	33.67	59.80
tblVehicleTrips	SU_TR	168.56	0.00
tblVehicleTrips	SU_TR	5.95	7.99
tblVehicleTrips	SU_TR	20.43	34.94
tblVehicleTrips	WD_TR	41.80	47.03
tblVehicleTrips	WD_TR	168.56	0.00
tblVehicleTrips	WD_TR	8.17	7.99
tblVehicleTrips	WD_TR	44.32	29.85
tblWater	IndoorWaterUseRate	10,962,733.18	4,000,000.00
tblWater	OutdoorWaterUseRate	6,719,094.53	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.7843	5.0000e-005	5.6600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0111	0.0111	3.0000e-005	0.0000	0.0118
Energy	0.0264	0.2402	0.2017	1.4400e-003		0.0183	0.0183		0.0183	0.0183	0.0000	1,097.7227	1,097.7227	0.0929	0.0230	1,106.8896
Mobile	2.4078	5.8836	28.9159	0.1221	15.7927	0.0842	15.8769	4.2327	0.0782	4.3109	0.0000	11,134.4777	11,134.4777	0.2733	0.0000	11,141.3113
Waste						0.0000	0.0000		0.0000	0.0000	197.3559	0.0000	197.3559	11.6634	0.0000	488.9410
Water						0.0000	0.0000		0.0000	0.0000	7.6547	20.4647	28.1194	0.7884	0.0190	53.4931
Total	**3.2185**	**6.1238**	**29.1233**	**0.1235**	**15.7927**	**0.1025**	**15.8952**	**4.2327**	**0.0965**	**4.3291**	**205.0106**	**12,252.6761**	**12,457.6868**	**12.8180**	**0.0420**	**12,790.6467**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5601	5.0000e-005	5.6600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0111	0.0111	3.0000e-005	0.0000	0.0118
Energy	0.0264	0.2402	0.2017	1.4400e-003		0.0183	0.0183		0.0183	0.0183	0.0000	1,097.7227	1,097.7227	0.0929	0.0230	1,106.8896
Mobile	2.4078	5.8836	28.9159	0.1221	15.7927	0.0842	15.8769	4.2327	0.0782	4.3109	0.0000	11,134.4777	11,134.4777	0.2733	0.0000	11,141.3113
Waste						0.0000	0.0000		0.0000	0.0000	197.3559	0.0000	197.3559	11.6634	0.0000	488.9410
Water						0.0000	0.0000		0.0000	0.0000	7.6547	20.4647	28.1194	0.7884	0.0190	53.4931
Total	**2.9944**	**6.1238**	**29.1233**	**0.1235**	**15.7927**	**0.1025**	**15.8952**	**4.2327**	**0.0965**	**4.3291**	**205.0106**	**12,252.6761**	**12,457.6868**	**12.8180**	**0.0420**	**12,790.6467**

	ROG	NOx	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	**6.96**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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	2.4078	5.8836	28.9159	0.1221	15.7927	0.0842	15.8769	4.2327	0.0782	4.3109	0.0000	11,134.4777	11,134.4777	0.2733	0.0000	11,141.3113
Unmitigated	2.4078	5.8836	28.9159	0.1221	15.7927	0.0842	15.8769	4.2327	0.0782	4.3109	0.0000	11,134.4777	11,134.4777	0.2733	0.0000	11,141.3113

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Discount Club	6,960.44	8,850.40	8850.40	20,933,198	20,933,198
Gasoline/Service Station	0.00	0.00	0.00		
Hotel	1,845.69	1,845.69	1845.69	5,191,105	5,191,105
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Strip Mall	149.25	174.70	174.70	436,716	436,716
Strip Mall	5,493.59	6,430.36	6430.36	16,074,627	16,074,627
Total	14,448.97	17,301.15	17,301.15	42,635,645	42,635,645

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-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Discount Club	9.50	7.30	7.30	16.70	64.30	19.00	100	0	0
Gasoline/Service Station	9.50	7.30	7.30	2.00	79.00	19.00	100	0	0
Hotel	9.50	7.30	7.30	19.40	61.60	19.00	100	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	100	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	100	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	100	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	100	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	100	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	100	0	0
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	100	0	0
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Discount Club	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0.000000	0.002788	0.001813	0.005773	0.000951	0.000692
Gasoline/Service Station	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0.000000	0.002788	0.001813	0.005773	0.000951	0.000692
Hotel	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0.000000	0.002788	0.001813	0.005773	0.000951	0.000692
Other Non-Asphalt Surfaces	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0.000000	0.002788	0.001813	0.005773	0.000951	0.000692
Parking Lot	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0.000000	0.002788	0.001813	0.005773	0.000951	0.000692
Strip Mall	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0.000000	0.002788	0.001813	0.005773	0.000951	0.000692

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	836.2743	836.2743	0.0879	0.0182	843.8875
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	836.2743	836.2743	0.0879	0.0182	843.8875
NaturalGas Mitigated	0.0264	0.2402	0.2017	1.4400e-003		0.0183	0.0183		0.0183	0.0183	0.0000	261.4484	261.4484	5.0100e-003	4.7900e-003	263.0021
NaturalGas Unmitigated	0.0264	0.2402	0.2017	1.4400e-003		0.0183	0.0183		0.0183	0.0183	0.0000	261.4484	261.4484	5.0100e-003	4.7900e-003	263.0021

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					
Discount Club	245680	1.3200e-003	0.0120	0.0101	7.0000e-005		9.2000e-004	9.2000e-004		9.2000e-004	9.2000e-004	0.0000	13.1104	13.1104	2.5000e-004	2.4000e-004	13.1883
Gasoline/Service Station	57797	3.1000e-004	2.8300e-003	2.3800e-003	2.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	3.0843	3.0843	6.0000e-005	6.0000e-005	3.1026
Hotel	4.28208e+006	0.0231	0.2099	0.1763	1.2600e-003		0.0160	0.0160		0.0160	0.0160	0.0000	228.5081	228.5081	4.3800e-003	4.1900e-003	229.8660
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	305501	1.6500e-003	0.0150	0.0126	9.0000e-005		1.1400e-003	1.1400e-003		1.1400e-003	1.1400e-003	0.0000	16.3027	16.3027	3.1000e-004	3.0000e-004	16.3996
Strip Mall	8300	4.0000e-005	4.1000e-004	3.4000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.4429	0.4429	1.0000e-005	1.0000e-005	0.4456
Total		**0.0264**	**0.2402**	**0.2017**	**1.4400e-003**		**0.0183**	**0.0183**		**0.0183**	**0.0183**	**0.0000**	**261.4484**	**261.4484**	**5.0100e-003**	**4.8000e-003**	**263.0021**

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					
Discount Club	245680	1.3200e-003	0.0120	0.0101	7.0000e-005		9.2000e-004	9.2000e-004		9.2000e-004	9.2000e-004	0.0000	13.1104	13.1104	2.5000e-004	2.4000e-004	13.1883
Gasoline/Service Station	57797	3.1000e-004	2.8300e-003	2.3800e-003	2.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	3.0843	3.0843	6.0000e-005	6.0000e-005	3.1026
Hotel	4.28208e+006	0.0231	0.2099	0.1763	1.2600e-003		0.0160	0.0160		0.0160	0.0160	0.0000	228.5081	228.5081	4.3800e-003	4.1900e-003	229.8660
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	305501	1.6500e-003	0.0150	0.0126	9.0000e-005		1.1400e-003	1.1400e-003		1.1400e-003	1.1400e-003	0.0000	16.3027	16.3027	3.1000e-004	3.0000e-004	16.3996
Strip Mall	8300	4.0000e-005	4.1000e-004	3.4000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.4429	0.4429	1.0000e-005	1.0000e-005	0.4456
Total		**0.0264**	**0.2402**	**0.2017**	**1.4400e-003**		**0.0183**	**0.0183**		**0.0183**	**0.0183**	**0.0000**	**261.4484**	**261.4484**	**5.0100e-003**	**4.8000e-003**	**263.0021**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Discount Club	4.00044e+006	500.8936	0.0526	0.0109	505.4537
Gasoline/Service Station	19482.2	2.4394	2.6000e-004	5.0000e-005	2.4616
Hotel	832920	104.2896	0.0110	2.2700e-003	105.2390
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	112167	14.0444	1.4800e-003	3.1000e-004	14.1723
Parking Lot	114345	14.3171	1.5000e-003	3.1000e-004	14.4474
Parking Lot	34412.4	4.3088	4.5000e-004	9.0000e-005	4.3480
Strip Mall	1.52383e+006	190.7978	0.0200	4.1500e-003	192.5347
Strip Mall	41400	5.1837	5.4000e-004	1.1000e-004	5.2309
Total		**836.2743**	**0.0879**	**0.0182**	**843.8875**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Discount Club	4.00044e+006	500.8936	0.0526	0.0109	505.4537
Gasoline/Service Station	19482.2	2.4394	2.6000e-004	5.0000e-005	2.4616
Hotel	832920	104.2896	0.0110	2.2700e-003	105.2390
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	112167	14.0444	1.4800e-003	3.1000e-004	14.1723
Parking Lot	114345	14.3171	1.5000e-003	3.1000e-004	14.4474
Parking Lot	34412.4	4.3088	4.5000e-004	9.0000e-005	4.3480
Strip Mall	1.52383e+006	190.7978	0.0200	4.1500e-003	192.5347
Strip Mall	41400	5.1837	5.4000e-004	1.1000e-004	5.2309
Total		**836.2743**	**0.0879**	**0.0182**	**843.8875**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	ROG	NOx	CO	SO2	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	0.5601	5.0000e-005	5.6600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0111	0.0111	3.0000e-005	0.0000	0.0118
Unmitigated	0.7843	5.0000e-005	5.6600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0111	0.0111	3.0000e-005	0.0000	0.0118

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	0.2671					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5167					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.2000e-004	5.0000e-005	5.6600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0111	0.0111	3.0000e-005	0.0000	0.0118
Total	**0.7843**	**5.0000e-005**	**5.6600e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0111**	**0.0111**	**3.0000e-005**	**0.0000**	**0.0118**

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	0.0429					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5167					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.2000e-004	5.0000e-005	5.6600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0111	0.0111	3.0000e-005	0.0000	0.0118
Total	**0.5601**	**5.0000e-005**	**5.6600e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0111**	**0.0111**	**3.0000e-005**	**0.0000**	**0.0118**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	28.1194	0.7884	0.0190	53.4931
Unmitigated	28.1194	0.7884	0.0190	53.4931

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Discount Club	4 / 0	3.9791	0.1306	3.1400e-003	8.1794
Gasoline/Service Station	0.265638 / 0.16281	0.3356	8.6800e-003	2.1000e-004	0.6152
Hotel	5.85972 / 0.65108	6.1144	0.1914	4.6000e-003	12.2701
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	14.0027 / 8.58228	17.6904	0.4577	0.0111	32.4285
Total		**28.1194**	**0.7884**	**0.0190**	**53.4931**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Discount Club	4 / 0	3.9791	0.1306	3.1400e-003	8.1794
Gasoline/Service Station	0.265638 / 0.16281	0.3356	8.6800e-003	2.1000e-004	0.6152
Hotel	5.85972 / 0.65108	6.1144	0.1914	4.6000e-003	12.2701
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	14.0027 / 8.58228	17.6904	0.4577	0.0111	32.4285
Total		**28.1194**	**0.7884**	**0.0190**	**53.4931**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	197.3559	11.6634	0.0000	488.9410
Unmitigated	197.3559	11.6634	0.0000	488.9410

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Discount Club	636.5	129.2038	7.6357	0.0000	320.0968
Gasoline/Service Station	10.78	2.1882	0.1293	0.0000	5.4213
Hotel	126.47	25.6723	1.5172	0.0000	63.6020
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	198.49	40.2917	2.3812	0.0000	99.8209
Total		**197.3559**	**11.6634**	**0.0000**	**488.9410**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Discount Club	636.5	129.2038	7.6357	0.0000	320.0968
Gasoline/Service Station	10.78	2.1882	0.1293	0.0000	5.4213
Hotel	126.47	25.6723	1.5172	0.0000	63.6020
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	198.49	40.2917	2.3812	0.0000	99.8209
Total		**197.3559**	**11.6634**	**0.0000**	**488.9410**

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

PGE Power Mix[1]

Source	2012	2013	2014	2015	2016	2017	2030
Renewables	19%	22%	27%	30%	33%	33%	60%
Natural Gas[3]	27%	28%	24%	25%	17%	20%	24%
Nuclear	21%	22%	21%	23%	24%	27%	0%
Large Hydroelectric[3]	11%	10%	8%	6%	12%	18%	11%
Unspecified	21%	18%	21%	17%	14%	2%	5.7%
Total	99%	100%	101%	101%	100%	100%	100%
CO2 Intensity Factor[2]	**444.62**	**427.27**	**434.92**	**404.51**	**293.67**	**--**	**276.0**

Notes:

1. PG&E Sustainability Reports
2. The Climate Registry
3. For these categories, the 2030 value is the average of past years.

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Generator Emissions

Costco Emergency Generator GHG Emissions

Conversion Factors	
HP/kW	1.3
CO2 kg/gal[1]	10.26
CH4 g/gal[2]	0.58
N2O g/gal[2]	0.26
GWP CH4[3]	25.0
GWP N2O[3]	298.0
CO2e g/gal	10352.0
CO2 g/gal	10260.0
CO2/CO2e[4]	99.11%
g/lb	453.6

Generator Rating:	1,000	kW
	1,341	HP
Load Factor[5]:	0.74	
Engine Emissions Tier:	Rule 1470 Compliant	
Operating Hours per Unit[6]:	2	hours/day
	50	hours/year

Emergency Generator Emissions

	Greenhouse Gases [4]	
Units	**CO_2**	**CO_2e**
g/kW-hr	—	—
g/HP-hr[7]	521.64	526.32
lbs/hr	1141.21	1,151.44
lbs/day	2,282.42	2,302.88
lbs/yr	57,060.44	57,571.98
tons/yr	**28.53**	**28.79**
metric tons/yr	**25.88**	**26.11**

1 Climate Registry, Table 12.1, https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf

2 Climate Registry, Table 13.7 (Other Large Utility): https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf

3 IPCC AR4 GWP, https://www.arb.ca.gov/cc/inventory/background/gwp.htm

4 Emissions of GHGs assume 99.11% of the CO2e emissions occur as CO2, based on Climate Registry emission factors as referenced above.

5 Load Factor based on CalEEMod Generator Set Load Factor

6 Number of hours permitted for testing and maintenance consistent with BAAQMD Regulation 9-8-330.3

7 Emission factor for CO2: U.S. Environmental Protection Agency, AP-42 Compilation of Air Pollutant Emission Factors, Fifth Edition, Section 3.3, Table 3.3-1.

Hotel Emergency Generator GHG Emissions

Conversion Factors	
HP/kW	1.3
CO2 kg/gal[1]	10.26
CH4 g/gal[2]	0.58
N2O g/gal[2]	0.26
GWP CH4[3]	25.0
GWP N2O[3]	298.0
CO2e g/gal	10352.0
CO2 g/gal	10260.0
CO2/CO2e[4]	99.11%
g/lb	453.6

Generator Rating:	1,000	kW
	1,341	HP
Load Factor[5]:	0.74	
Engine Emissions Tier:	Rule 1470 Compliant	
Operating Hours per Unit[6]:	2	hours/day
	50	hours/year

Emergency Generator Emissions

	Greenhouse Gases [4]	
Units	**CO_2**	**CO_2e**
g/kW-hr	—	—
g/HP-hr[7]	521.64	526.32
lbs/hr	1141.21	1,151.44
lbs/day	2,282.42	2,302.88
lbs/yr	57,060.44	57,571.98
tons/yr	**28.53**	**28.79**
metric tons/yr	**25.88**	**26.11**

1 Climate Registry, Table 12.1, https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf

2 Climate Registry, Table 13.7 (Other Large Utility): https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pd

3 IPCC AR4 GWP, https://www.arb.ca.gov/cc/inventory/background/gwp.htm

4 Emissions of GHGs assume 99.11% of the CO2e emissions occur as CO2, based on Climate Registry emission factors as referenced above.

5 Load Factor based on CalEEMod Generator Set Load Factor

6 Number of hours permitted for testing and maintenance consistent with BAAQMD Regulation 9-8-330.3

7 Emission factor for CO2: U.S. Environmental Protection Agency, AP-42 Compilation of Air Pollutant Emission Factors, Fifth Edition, Section 3.3, Table 3.3-1.

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Vehicle Emissions

Light-Duty Vehicle Idling GHG Emissions at Gas Station

MT/g	CO_2	CH_4	N_2O
1.00000E-06		GWP[1]	
	1	25	298

Year	CO_2	CH_4	N_2O
		g/min	
2021	61.0082	0.0020	0.0009
2031	46.5566	0.0007	0.0005

Light-Duty Vehicle Idling Fuel Consumption at Gas Station

Phase	Year	Trips per Day (In/Out)	# of Cars Idling per Day	Idling Duration (min)	Days/yr	CO_2	CH_4	N_2O	$MTCO_2e/yr$
						MT/yr			
Phase 1	2021	3371	1686	10	365	375.35	0.01	0.01	377
Full Buildout	2031	3371	1686	10	365	286.44	0.00	0.00	287

Notes:

1 Global Warming Potentials (GWP) based on IPCC AR4, https://www.arb.ca.gov/cc/inventory/background/gwp.htm

Project Trip Generation

Table 1: Previous Trips Generation Estimates (Phase 1)[1]

Land Use	Size	Unit	Weekday Trips	Saturday Trips	Weekday Trip Rate	Saturday Trip Rate
Retail	24	1000sqft	1,000	1,170	42.6	49.8
Club Retail with Fuel	148	1000sqft	10,710	11,060	72.4	74.7
Hotel (150 Rooms)	88	1000sqft	1,230	1,230	14.0	14.0
		Total	**12,940**	**13,460**		
	Reductions[1]	Pass By Trips (Retail)	300	350		
		Pass By Trips (Club Retail with Fuel)	3,750	2,210		
		Total After Reductions	**8,890**	**10,900**		

Table 2: Previous Trips Generation Estimates (Phase 2)[1]

Land Use	Size	Unit	Weekday Trips	Saturday Trips	Weekday Trip Rate	Saturday Trip Rate
Retail	246	1000sqft	10,510	12,300	42.6	49.9
		30% Reduction	3,153	3,690		
		Net Trips	**7,357**	**8,610**		

Table 3: Updated Trips Generation Estimates (Phase 1)

Land Use	Size	Unit	Weekday Trip Rate	Saturday Trip Rate	Weekday Trips	Saturday Trips
Retail	5	1000sqft	42.6	49.8	213	249
Club Retail with Fuel	148	1000sqft	72.4	74.7	10,710	11,060
Hotel (231 Rooms)	132	1000sqft	14.0	14.0	1,845	1,845
				Total	**12,768**	**13,154**
			Reductions[1]	Pass By Trips (Retail)	64	75
				Pass By Trips (Club Retail with Fuel)	3,750	2,210

Trip Rates for CalEEMod	Weekday Trip Rate	Saturday Trip Rate
Retail	**29.82**	**34.89**
Club Retail with Fuel	**47.03**	**59.80**
Hotel (231 Rooms)*	**7.99**	**7.99**

**CalEEMod uses vehicle trips per room instead of SF*

Vehicle Type	Fleet Distribution	Fleet Distribution**
LDA	0.59	0.594046867
LDT1	0.06	0.064403952
LDT2	0.21	0.208695384
MDV	0.13	0.132853797

**These values entered in CalEEMod, all other vehicle categories zeroed-out, only these light-duty vehicle categories are evaluated.*

Net Total	
Retail	149
Club Retail with Fuel	6,960
Hotel (231 Rooms)	1,845

Weighted Daily Trips	
Retail	156
Club Retail with Fuel	7,500
Hotel (231 Rooms)	1,845

Total After Reductions	**8,954**	**10,869**
Weighted Daily Trips	**9,501**	

Table 4: Updated Trips Generation Estimates (Phase 2)

Land Use	Size	Unit	Weekday Trip Rate	Saturday Trip Rate	Weekday Trips	Saturday Trips
Retail	184	1000sqft	43	50	7,849	9,185
				Total	**7,849**	**9,185**
			Reductions[1]	Pass By Trips (Retail)	2,355	2,756
				Total After Reductions	**5,494**	**6,430**
				Weighted Daily Trips	**5,596**	

Trip Rates for CalEEMod	Weekday Trip Rate	Saturday Trip Rate
Retail	**29.85**	**34.94**

Hotel/Retail Trucks

Land Use	Weighted Daily Trucks
Phase 2-Retail	165
Phase 1-Retail	4
Phase 1-Hotel	54

Phase 2 Retail Trucks

Weekday Trips	Weekend Trips
157	184
Weighted Daily Trucks	
112.45	52.64

1) Johnson Drive Economic Development Zone Transportation Impact Analysis, Fehr & Peers, 2015.

HHDT Running GHG Emissions

MT/g	CO_2	CH_4	N_2O
0.000001		GWP[1]	
	1	25	298

MY AGG Year	CO_2	CH_4	N_2O
		g/mi	
2021	1522.743	0.006	0.239
2031	1177.268	0.001	0.185

MY 2016 Year	CO_2	CH_4	N_2O
		g/mi	
2021	1353.843	0.001	0.213
2031	1388.080	0.001	0.218

Phase 1 HHDT Running GHG Emissions[2]

Source	Year	# of Trucks per Day	Total Truck Trips per Day (In/Out)	Trip Length (mi)	Days/year	CO_2	CH_4	N_2O	$MTCO_2e/yr$
						MT/yr			
Costco	2021	10	20	24.5	365	242.13	0.00	0.04	253.48
Gas Station	2021	6	12	30.0	365	177.90	0.00	0.03	186.23
Phase 1 - Retail/Hotel	2021	29	58	7.3	365	236.55	0.00	0.04	247.65
								Phase 1 Total	**687.36**

Full Buildout HHDT Running GHG Emissions

Source	Year	# of Trucks per Day	Total Truck Trips per Day (In/Out)	Trip Length (mi)	Days/year	CO_2	CH_4	N_2O	$MTCO_2e/yr$
						MT/yr			
Costco	2031	10	20	24.5	365	248.26	0.00	0.04	259.89
Gas Station	2031	6	12	30.0	365	182.39	0.00	0.02	189.64
Phase 1 - Retail/Hotel	2031	29	58	7.3	365	182.88	0.00	0.03	191.45
Phase 2- Trucks	2031	165	330	7.3	365	1035.74	0.00	0.16	1084.28
								Full Buildout Total	**1725.27**

Notes:

1 Global Warming Potentials (GWP) based on IPCC AR4, https://www.arb.ca.gov/cc/inventory/background/gwp.htm

2 Costco truck fleet emission factors are based on an average truck model year of 2016. Non-costco trucks emission factors are based on an aggregate truck model year.

HHDT Idling GHG Emissions

MT/g	CO_2	CH_4	N_2O
0.000001	GWP[1]		
	1	25	298

MY AGG	CO_2	CH_4	N_2O
Year	g/min[2,3]		
2021	101.7912	0.0018	0.0720
2031	84.0896	0.0018	0.0602

MY 2016	CO2	CH4	N2O
Year	g/min[2,3]		
2021	95.9612	0.0018	0.1076
2031	95.9612	0.0018	0.0682

Phase 1 HHDT Idling GHG Emissions[4]

Source	Year	# of Trucks per Day	Idling Minutes	Days per year	CO_2	CH_4	N_2O	$MTCO_2e/yr$
					MT/yr			
Costco	2021	10	15	365	5.25	1.00E-04	5.89E-03	7.01
Gas Station	2021	6	15	365	3.15	6.02E-05	3.54E-03	4.21
Phase 1 - Retail/Hotel	2021	29	15	365	16.25	2.95E-04	1.15E-02	19.68
							Phase 1 Total	**30.90**

Full Buildout HHDT Idling GHG Emissions

Source	Year	# of Trucks per Day	Idling Minutes	Days/year	CO_2	CH_4	N_2O	$MTCO_2e/yr$
					MT/yr			
Costco	2031	10	15	365	5.25	1.00E-04	3.73E-03	6.37
Gas Station	2031	6	15	365	3.15	6.02E-05	2.24E-03	3.82
Phase 1 - Retail/Hotel	2031	29	15	365	13.42	2.91E-04	9.61E-03	16.29
Phase 2- Trucks	2031	165	15	365	76.01	1.65E-03	5.44E-02	92.27
							Full Buildout Total	**118.75**

Notes:

1 Global Warming Potentials (GWP) based on IPCC AR4, https://www.arb.ca.gov/cc/inventory/background/gwp.htm

2 CO2 and CH4 values from EMFAC2017 desktop version

3 N2O value from EMFAC2017 Web Database

4 Costco truck fleet emission factors are based on an average truck model year of 2016. Non-costco trucks emission factors are based on an aggregate truck model year.

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Transportation Refrigeration Unit Emissions

TRU Operation

TRU Fuel Consumption

Source	Input
Costco	
Daily Trucks[1]	10
Trucks per Hour	1
Percent box trucks with TRUs[1]	75%
TRU operation/trip (hrs)[1]	2
Annual hours of TRU operation	5,475
Phase 1 - Retail/Hotel	
Daily one-way trips	58
Daily Trucks	29
Trucks per Hour	3
Percent semi trucks with TRUs[1]	25%
TRU operation/trip (hrs)[1]	2
Annual hours of TRU operation	5,320
Phase 2 - Onsite Businesses	
Daily one-way trips	330
Daily Trucks	165
Trucks per Hour	17
Percent semi trucks with TRUs[1]	25%
TRU operation/trip (hrs)[1]	2
Annual hours of TRU operation	30,130

Parameters for TRU Trucks	
TRU horsepower[2]	34
TRU load factor	0.46

MT/g
0.000001

Phase 1 TRU Diesel Consumption

Source	Year	Annual Hours of TRU Operation	CO_2 (g/hr)[2]	$MTCO_2$
Costco	2021	5,475	19,715	107.94
Phase 1 - Retail/Hotel	2021	5,320	19,715	104.88
			Phase 1 Total	**212.82**

Full Buildout TRU Diesel Consumption

Source	Year	Annual Hours of TRU Operation	CO_2 (g/hr)[2]	$MTCO_2$
Costco	2031	5,475	19,715	107.94
Phase 1 - Retail/Hotel	2031	5,320	19,715	104.88
Phase 2 - Onsite Businesses	2031	30,130	19,715	594.00
			Full Buildout Total	**806.83**

Notes:

1 Johnson Drive HRA Assumptions

2 NREL, Emissions of Transport Refrigeration Units with CARB Diesel, Gas-to-Liquid Diesel, and Emissions Control Devices, p.5. Accessed February 2019.

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GHG Emissions Reductions from Solar PV System

Solar PV Calculations

Rooftop PV System of 500 kW (AC)
ET 345 W Modules = 2,052 count
Solectria PVI 60TL-480

Annual Production KWh =	1,128,400
Total Rated Watts(ac) =	540,000

	CalEEMod EFs used for Project	
2021	294	lbs/MWh (estimated 2020 EF)
	150	MT CO2e/year
2031	276	lbs/MWh (estimated 2020 EF)
	141	MT CO2e/year

	Independent PG&E EF analysis	
2021	309	lbs/MWh (estimated 2020 EF)
	158	MT CO2e/year
2031	262	lbs/MWh (estimated 2020 EF)
	134	MT CO2e/year

	Total Project Emissions-Does not include EVCS Reductions	
2021	11,761	MT CO2e/year
2031	15,504	MT CO2e/year
	Total Project Emissions AFTER Solar PV	
2021	11,611	MT CO2e/year
2031	15,363	MT CO2e/year
	SP	
2021	642	
2031	1,149	
	Per SP	
2021	18.1	MT CO2e/year-SP
2031	13.4	MT CO2e/year-SP

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GHG Emissions Reductions from Electric Vehicle Charging Stations

2021 EVCS Calculations

Costco Electric Vehicle Charging Station Energy Consumption

# of EV Parking Spaces[1]	Hours of EV Charging/Space/Day[2] (hours)	Power Consumption (kW)[2]	Daily Electricity Consumption (kWh/day)	Days /Year[11]	kWh/year
10	6	6.25	375	358	134,250

Costco Electric Vehicle Charging Station GHG Reductions[7]

PG&E 2021 GHG Emission Factors (lbs/MWh)[3,4]			Global Warming Potentials[5]			PG&E 2021 Electricty Emission Factor (lbs CO_2e/MWh)
CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	
293.67	0.029	0.00617	1	25	298	296.23

Variable	Value
PG&E 2021 Electricty Emission Factor ($MTCO_2e$/MWh)	0.13
Fuel Economy of Electric Vehicle (kWh/mile)[2,8]	0.25
Gasoline/Diesel CO_2e Running Emission Factor (g/mile)[10]	287.10
Level 2 Charging Rate (driving miles/hour of charging)[2,6]	25.00
Annual VMT per Charging Station (miles/charging station/year)	53,700
Annual VMT from All Charging Stations (miles/year)	537,000
GHG Emissions from Gasoline/Diesel Vehicles ($MTCO_2e$/year)	154.17
GHG Emissions of Electric Vehicles ($MTCO_2e$/year)	18.04
GHG Emissions Reduction	**136.13**
GHG Reduction Per Parking Space	13.61

Costco Electric Vehicle Charging Station Fuel Savings[9]

				Fuel Distribution		Annual Fuel Savings (gallons)	
Operational Year	Annual VMT from All Charging Stations (miles/year)	DSL Fuel Factor (gal/mi)	GAS Fuel Factor (gal/mi)	DSL % of VMT	GAS % of VMT	DSL	GAS
2021	537,000	0.0331	0.0431	4%	96%	764	22,125

1. Information provided by applicant
2. Daily charging hours per space based on conservative assumption that charging stations used no more than 50% of warehouse open hours.

3. The Climate Registry, 2018 Default Emission Factors
4. CH4 and N2O electricity emission factors based on CalEEMod default values for PG&E.
   CalEEMod User's Guide, Appendix D, Table 1.2
5. Global Warming Potentials based on Intergovernmental Panel on Climate Change Assessment Report 4. GWPs consistent with CARBs GHG Emissions Inventory.
   https://www.arb.ca.gov/cc/inventory/background/gwp.htm
6. Assumes a Level 2 Charging Space
7. Methodology based on GHG reduction calculations of Commercial EVCS for Newhall Ranch Project
8. US Department of Energy, Alternative Fuels Data Center, Electric Vehicle Benefits and Considerations
   https://afdc.energy.gov/fuels/electricity_benefits.html
9. Fuel Factors and Fuel Distribution obtained from Project's Operational Fuel Consumption calculations.
10. Emission factor derivation consistent with metholdogy used for Newhall Ranch Project
11. Costco is closed 7 days per year
    https://www.costco.com/hours-and-holiday-closures.html

2031 EVCS Calculations

Costco Electric Vehicle Charging Station Energy Consumption

# of EV Parking Spaces[1]	Hours of EV Charging/Space/Day[2] (hours)	Power Consumption (kW)[2]	Daily Electricity Consumption (kWh/day)	Days /Year[11]	kWh/year
10	6	6.25	375	358	134,250

Costco Electric Vehicle Charging Station GHG Reductions[7]

PG&E 2031 GHG Emission Factors (lbs/MWh)[3,4]			Global Warming Potentials[5]			PG&E 2031 Electricty Emission Factor (lbs CO_2e/MWh)
CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	
276.04	0.029	0.00617	1	25	298	278.60

Variable	Value
PG&E 2031 Electricty Emission Factor ($MTCO_2e$/MWh)	0.13
Fuel Economy of Electric Vehicle (kWh/mile)[2,8]	0.25
Gasoline/Diesel CO_2e Running Emission Factor (g/mile)[10]	202.67
Level 2 Charging Rate (driving miles/hour of charging)[2,6]	25.00
Annual VMT per Charging Station (miles/charging station/year)	53,700
Annual VMT from All Charging Stations (miles/year)	537,000
GHG Emissions from Gasoline/Diesel Vehicles ($MTCO_2e$/year)	108.83
GHG Emissions of Electric Vehicles ($MTCO_2e$/year)	16.97
GHG Emissions Reduction	**91.87**
GHG Reduction Per Parking Space	9.19

Costco Electric Vehicle Charging Station Fuel Savings[9]

				Fuel Distribution		Annual Fuel Savings (gallons)	
Operational Year	Annual VMT from All Charging Stations (miles/year)	DSL Fuel Factor (gal/mi)	GAS Fuel Factor (gal/mi)	DSL % of VMT	GAS % of VMT	DSL	GAS
2031	537,000	0.0260	0.0337	5%	95%	662	17,230

1. Information provided by applicant
2. Daily charging hours per space based on assumption that charging stations in use approximately 50% of store's open hours.
3. The Climate Registry, 2018 Default Emission Factors
4. CH4 and N2O electricity emission factors based on CalEEMod default values for PG&E.
   CalEEMod User's Guide, Appendix D, Table 1.2
5. Global Warming Potentials based on Intergovernmental Panel on Climate Change Assessment Report 4. GWPs consistent with CARBs GHG Emissions Inventory.
   https://www.arb.ca.gov/cc/inventory/background/gwp.htm
6. Assumes a Level 2 Charging Space
7. Methodology based on GHG reduction calculations of Commercial EVCS for Newhall Ranch Project
8. US Department of Energy, Alternative Fuels Data Center, Electric Vehicle Benefits and Considerations
   https://afdc.energy.gov/fuels/electricity_benefits.html
9. Fuel Factors and Fuel Distribution obtained from Project's Operational Fuel Consumption calculations.
10. Emission factor derivation consistent with metholdogy used for Newhall Ranch Project
11. Costco is closed 7 days per year
    https://www.costco.com/hours-and-holiday-closures.html

Phase 1 Vehicle Fleet Mix

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Discount Club	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0	0.002788	0.001813	0.005773	0.000951	0.000692
Gasoline/Service Station	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0	0.002788	0.001813	0.005773	0.000951	0.000692
Hotel	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0	0.002788	0.001813	0.005773	0.000951	0.000692
Other Non-Asphalt Surfaces	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0	0.002788	0.001813	0.005773	0.000951	0.000692
Parking Lot	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0	0.002788	0.001813	0.005773	0.000951	0.000692
Strip Mall	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0	0.002788	0.001813	0.005773	0.000951	0.000692

Light Duty Fleet Mix

LDA	LDT1	LDT2
0.718361	0.044545	0.237094

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH	Weighted Emission Factor (g/mile)	Weighted Emission LD CO_2 Emission Factor
A	CO2_NBIO_RUNEX	260.8183	318.0366	360.9024	480.9263	703.239	722.9495	1202.831	1653.497	1319.03	2154.934	172.8633	1145.98	1222.96	341.5756634	287.0964595

Full Buildout Vehicle Fleet Mix

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Discount Club	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0	0.002788	0.001813	0.005773	0.000951	0.000692
Gasoline/Service Station	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0	0.002788	0.001813	0.005773	0.000951	0.000692
Hotel	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0	0.002788	0.001813	0.005773	0.000951	0.000692
Other Non-Asphalt Surfaces	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0	0.002788	0.001813	0.005773	0.000951	0.000692
Parking Lot	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0	0.002788	0.001813	0.005773	0.000951	0.000692
Strip Mall	0.603495	0.037422	0.199183	0.109359	0.012926	0.005431	0.020167	0	0.002788	0.001813	0.005773	0.000951	0.000692

Light Duty Fleet Mix

LDA	LDT1	LDT2
0.718361	0.044545	0.237094

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH	Weighted Emission LD CO_2 Emission Factor
A	CO2_NBIO_RUNEX	181.3834	230.6901	261.8835	354.8922	638.7943	674.6585	1162.173	1503.697	1273.804	1938.928	175.6877	1074.003	1181.944	202.6658785

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Operations Emissions Summary

Operations GHG Summary	Phase 1 (2021)	Full Buildout (2031)
Source	**$MTCO_2e/yr$**	
Area	0.008	0.0118
Electricity	677	844
Natural Gas	247	263
Light-Duty Vehicles (Running)	9,324	11,141
Light-Duty Vehicles (Idling at Gas Station)	377	287
Heavy Duty Trucks (Running)	687	1,725
Heavy Duty Trucks (Idling)	31	119
TRUs	213	807
Costco Generator	26	26
Hotel Generator	26	26
Waste	392	489
Water	22	53
Construction (Amortized over 30 years)	42	69
Project Subtotal	**12,065**	**15,850**
Reductions from EV Charging Stations	136	92
Project Total	**11,929**	**15,758**
Mitigation Reductions		
MM-GHG-1: Costco Solar PV System	150	141
Total Project Emissions After Mitigation	11,778	15,617