



Greenhouse Gas Technical Report  
The Reef Project  
Los Angeles, California

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## Acronyms and Abbreviations

<b>Acronym</b>	<b>Definition</b>
AB	Assembly Bill
ACC	Advanced Clean Cars
BAU	Business-As-Usual
BTU	British Thermal Units
CalEEMod™	California Emission Estimator Model™
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CEUS	Commercial End-Use Survey
CH <sub>4</sub>	Methane
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	CO <sub>2</sub> equivalents
DOT	Department of Transportation
EISA	Energy Independence and Security Act of 2007
EMFAC	EMission FACtor model
EPA	Environmental Protection Agency
ES	Executive Summary
GHG	greenhouse gas
GWP	global warming potential
IPCC	Intergovernmental Panel on Climate Change
ITE	Institute of Transportation Engineers
lb	pound
LADWP	Los Angeles Department of Water and Power
LCFS	Low Carbon Fuel Standard
Mga/yr	thousand gallons/year
MSW	Municipal solid waste
MT	metric tons
MTCO <sub>2</sub> e	metric tonnes of CO <sub>2</sub> equivalent
MWh	megawatt-hour

<b>Acronym</b>	<b>Definition</b>
N <sub>2</sub> O	nitrous oxide
NA	not applicable
NHTSA	National Highway Traffic Safety Administration
PUP	Power/Utility Protocol
RASS	Residential Appliance Saturation Survey
ROG	reactive organic gasses
RPS	Renewable Portfolio Standards
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
USEPA	United States Environmental Protection Agency
VMT	vehicle miles traveled

## Executive Summary

The Reef Project (the Project) is a proposed development in the City of Los Angeles that consists of modifications to The REEF Building and construction of a new development on the remainder of the Project Site currently occupied by surface parking lots and about 11,150 square foot of warehouse. The Project Site consists of two full city blocks comprising approximately 9.7 acres bounded by Washington Boulevard on the north, Hill Street to the west, 21<sup>st</sup> Street to the south and Main Street to the east in downtown Los Angeles. The Project's proposed uses are identified in Table 1. Construction of the Project is expected to be completed in 2021.

The Project will result in one-time and annual direct and indirect emissions of greenhouse gases (GHGs). The term, "direct emissions of GHGs" refers to GHGs that are emitted directly as a result of the project and include land use change and construction emissions. Indirect emissions are those emissions that the project entitlement will enable, but are not controlled by the project proponent. This report provides an inventory surveying the emissions that would result from the Project.

Residents and the employees and patrons of commercial and municipal buildings and services use electricity, heating, and are transported by motor vehicles. These activities directly or indirectly emit GHGs. The most significant GHG emissions resulting from developments such as the Project are emissions of carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). GHG emissions are typically measured in terms of tonnes of CO<sub>2</sub> equivalents (CO<sub>2</sub>e), calculated as the product of the mass emitted of a given GHG and its specific global warming potential (GWP).

The GHG emissions inventory for this analysis includes the following sources of emissions: energy use associated with residential and non-residential buildings, mobile sources, area sources, solid waste, water and wastewater, construction, and vegetation changes. The ongoing operational emissions consist of the first five categories, while the one-time emissions are associated with the construction and vegetation changes. This report includes the direct emissions associated with the development as well as the indirect emissions that may result from the development. These indirect emissions are associated with electricity generation, the embodied energy used in supplying potable water, and emissions associated with solid waste disposal. The electrical power for the Project will be supplied by the Los Angeles Department of Water and Power (LADWP). Accordingly, indirect GHG emissions from electricity usage associated with the Project is calculated using the LADWP carbon-intensity factors adjusted for mandated renewable energy requirements.

This analysis primarily utilized the California Emission Estimator Model version 2013.2.2 (CalEEMod™)<sup>1</sup> to assist in quantifying the GHG emissions in the inventories presented in this report for the Project. CalEEMod™ is a statewide program designed to calculate both criteria

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<sup>1</sup> SCAQMD, 2013, California Emissions Estimator Model. Available at: <http://www.CalEEMod.com/>. Accessed: November, 2014.

and GHG emissions from development projects in California. Third-party studies were also relied upon to support analyses and assumptions made outside of CalEEMod™.

At this time, there are no adopted numeric thresholds that govern the determination of the significance of the Project's GHG emissions. The South Coast Air Quality Management District (SCAQMD or District) has adopted neither a methodology to quantify nor a significance threshold for GHG emissions for development projects<sup>2</sup>. However, the District did release draft thresholds in September 2008 for discussion purposes. The draft thresholds were based on California Air Resources Board (CARB)'s interpretations of the statewide reductions called for in the California Global Warming Solutions Act of 2006, also known as Assembly Bill 32 (AB 32). The analysis in this report compares the Project's emissions to the SCAQMD draft efficiency metric, which was derived consistent with the AB 32 Scoping Plan's statewide goals.

Emissions for the Project are presented in Table ES-1. Both one-time emissions and indirect emissions are expected to occur each year after build-out of the Project. One-time emissions from construction and vegetation removal were amortized over a 30-year period because no significance threshold has been adopted for construction GHG emissions<sup>3</sup>. The Project emissions inventory includes the Project's commitments to reduce GHG emissions and regulatory requirements, which include regulations such as the implementation of the Renewables Portfolio Standard of 33 percent, the Pavley regulation and Advanced Clean Cars (ACC) program mandating higher fuel efficiency standards for light-duty vehicles, and the Low Carbon Fuel Standard (LCFS). The emissions for the Project are estimated to be 25,271 metric tons (MT) CO<sub>2</sub>e/yr, which corresponds to an efficiency metric of 4.76. This estimate represents the new land uses that are developed as part of this Project. Based on these results, the Project will be below the draft SCQMD efficiency threshold (4.8 MT/SP-year).

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<sup>2</sup> SCAQMD has adopted interim significance thresholds for industrial sources of 10,000 metric tons of carbon dioxide equivalents per year. The Board adopted these December 5, 2008.

<sup>3</sup> This approach to one-time construction and vegetation change GHG emissions is based on the GHG Threshold Working Group Meeting #13 Minutes from August 26, 2009. Available at: [http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-\(ghg\)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-13/ghg-meeting-13-minutes.pdf?sfvrsn=2](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-13/ghg-meeting-13-minutes.pdf?sfvrsn=2). Accessed: December, 2014.

## Table ES-1. Summary of GHG Emissions

The Reef Project  
Los Angeles, California

Category <sup>1</sup>	CO <sub>2</sub> e Emissions <sup>2</sup>
	(MT/yr)
Area	25
Energy Use	6,611
Water Use	712
Waste Disposed	522
Traffic	12,786
Swimming Pool	323
Signage	3,634
<b>Sub-Total</b>	<b>24,614</b>
Construction Amortized	664
Vegetation Amortized	-6
<b>Total</b>	<b>25,271</b>
Service Population <sup>3</sup>	5,314
Emissions per Service Population	4.76
AQMD Efficiency Metric Threshold <sup>4</sup>	4.8
Above Threshold?	No

### Notes:

<sup>1</sup> CO<sub>2</sub>e emissions were estimated using CalEEMod version 2013.2.2 for all operational categories.

<sup>2</sup> CO<sub>2</sub>e includes CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions, which are weighted by their respective global warming potentials.

<sup>3</sup> Non-residential service population obtained from project specific "POPULATION/HOUSING/EMPLOYMENT" report. Residential population generated by CalEEMod.

### Abbreviations:

CH <sub>4</sub> - methane	MT - metric tons
CO <sub>2</sub> - carbon dioxide	N <sub>2</sub> O - nitrous oxide
CO <sub>2</sub> e - carbon dioxide equivalents	yr - year
GHG - greenhouse gases	SCAQMD - South Coast Air Quality Management District
AQMD - Air Quality Management District	CEQA - California Environmental Quality Act
CalEEMod - CALifornia Emissions Estimator MODel	

### Reference:

<sup>4</sup> SCAQMD 2010. CEQA Significance Thresholds Working Group Meeting #15. September 28. Available at: [http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-\(ghg\)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-main-presentation.pdf?sfvrsn=2](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-main-presentation.pdf?sfvrsn=2). Accessed: November, 2014.



# 1 Introduction

The purpose of this technical report is to present the quantitative analyses that were used to evaluate the Project's greenhouse gas (GHG) emissions. Emissions during both construction and operations of the Project were quantified. Legislation and rules regarding climate change, as well as scientific understanding of the extent to which different activities emit GHGs, continue to evolve; as such, the inventory in this report is a reflection of the guidance and knowledge currently available.

## 1.1 Project Description

The Reef Project (the "Project") is a development plan of two full city blocks in the City of Los Angeles. The Reef Project area is approximately 9.7 acres bounded by Washington Boulevard on the north, Hill Street to the west, 21<sup>st</sup> Street to the south, and Main Street to the east, in downtown Los Angeles. The Project Site is located in a heavily visited area of downtown Los Angeles.

The proposed Project will consist of modifications to The REEF Building and construction of new development on the remainder of the Project Site. Table 1 summarizes the land uses for the proposed Project.

Analysis of the Project's GHG emissions incorporates the following regulatory measures:

### ***Regulatory Measures***

- The CO<sub>2</sub>e intensity assumes that the 33% Renewable Portfolio Standard (RPS) is achieved.
- Pavley regulation mandating higher fuel efficiency standards for cars and light-duty vehicles, Fuel Standard (LCFS) and the Advanced Clean Cars are included in vehicle emissions estimate for the Project.<sup>4</sup>
- New Residential and non-residential buildings will meet the 2013 Title 24 part 6 building code.
- The Project will reduce potable water use by 20 percent compared to baseline water use levels through the use of water saving fixtures and or flow restrictors consistent with the California Green Building Standards.

### ***Project Design Features***

The following project design features were incorporated into the analysis, which are described in the inventory:

- The Project will not include any fireplaces (i.e., hearths) in the residential land uses.

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<sup>4</sup> The analysis does not incorporate the potential emission reductions from the USEPA/NHTSA advanced fuel economy and GHG standards for medium and heavy-duty trucks for model years 2014-2018 as part of this analysis. If incorporated, it would reduce the estimated emissions further. Available at: <http://www.epa.gov/otag/climate/documents/420f11031.pdf>. Accessed: November, 2014.

- Where appliances are offered by builders, Energy Star appliances will be installed in the residential and non-residential buildings.
- Where lighting is provided by builders, high efficiency light bulbs and lighting fixtures will be installed in residential and non-residential buildings.

### ***Mitigation Measures***

The following mitigation measures, as identified in Section IV.N, Transportation, of this EIR, are reflected in the analysis:

- Transportation Demand Management measures, including:
  - Provide sidewalk bike racks (including near bus stops).
  - Coordinate with LADOT to provide the physical space (approximately 1,000 square feet rent free in a strategic location visible to the public) for a Mobility Hub/Bikeshare Station at the Project Site that could include space for:
    - secure, long-term parking,
    - maintenance and repair, and/or potential small Bicycle Store, and
    - area for bike share.
  - Make a one-time financial contribution of \$250,000 to the City of Los Angeles Department of Transportation, the monies to be used in the implementation of the Mobility Hub on the site of the Proposed Project.
  - Make a one-time financial contribution of \$250,000 to the City's Bicycle Trust Fund, the monies to be used to improve bicycle facilities in the area of the Proposed Project.
  - Participate in a Car-Share Program, and provide a minimum of 10 (ten) off-street car share parking spaces in the Proposed Project's parking garage.
  - Facilitate rideshare through an on-site transportation coordinator.
  - Facilitate carpools and vanpools for project employees, students, etc. by providing priority locations for carpool and vanpool parking.
  - Provide on-site facility with information on car-sharing, vanpools, taxis (e.g., kiosk, concierge, or transportation office).
  - Provide emergency or late-night ride homes for transit users or carpoolers who reasonably and unexpectedly leave work early or late and cannot take bus/train/carpool.

## **1.2 Existing Conditions**

Existing uses within the Project Site include The REEF building, located at the northwest corner of the Project Site, and an approximately 11,150 square foot warehouse building located at the southeast corner of the Project Site. The remainder of the Project Site is occupied by surface parking lots containing approximately 1,100 parking spaces. Table 2 lists the existing land uses. The criteria pollutant emissions from these existing land uses were estimated using CalEEMod as described in Section 2 and are shown in Table 3.

## 2 Draft Significance Thresholds and Regulatory Background

### 2.1 Regulatory Setting

The following regulations relate to the calculation of the Project's GHG emissions.

#### 2.1.1 Federal

##### Supreme Court Ruling in Massachusetts et al. v. Environmental Protection Agency

The Bush Administration's approach to addressing climate change was challenged in *Massachusetts et al. v. Environmental Protection Agency (EPA)*, 549 US 497 (2007). In this decision, the U.S. Supreme Court held that the United States Environmental Protection Agency (USEPA) was authorized by the Clean Air Act to regulate CO<sub>2</sub> emissions from new motor vehicles<sup>5</sup>. The Court did not mandate that the USEPA enact regulations to reduce GHG emissions, but found that the only instances in which the USEPA could avoid taking action were if it found that GHGs do not contribute to climate change or if it offered a “reasonable explanation” for not determining that GHGs contribute to climate change.

On December 7, 2009, the USEPA issued an “endangerment finding” under the Clean Air Act, concluding that GHGs threaten the public health and welfare of current and future generations and that motor vehicles contribute to greenhouse gas pollution<sup>6</sup>. These findings provide the basis for adopting new national regulations to mandate GHG emission reductions under the federal Clean Air Act. The EPA's endangerment finding paves the way for federal regulation of GHGs.

It was expected that Congress would enact GHG legislation, primarily for a cap-and-trade system. However, proposals circulated in both the House of Representative and Senate were controversial and it may be some time before Congress adopts major climate change legislation. Under the Consolidated Appropriations Act of 2008 (HR 2764), Congress has established mandatory GHG reporting requirements for some emitters of GHGs. In addition, on September 22, 2009, the EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule. The rule requires annual reporting to the EPA of GHG emissions from large sources and suppliers of GHGs, including facilities that emit 25,000 metric tons (MT) or more a year of GHGs.

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<sup>5</sup> Massachusetts, et al. v. Environmental Protection Agency (2007). Available at: <http://www.law.cornell.edu/supct/html/05-1120.ZS.html>. Accessed: November, 2014.

<sup>6</sup> United States Environmental Protection Agency, *Endangerment, and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act*. Available at: <http://www.epa.gov/climatechange/endangerment/>. Accessed: November, 2014.

### 2.1.1.1 Mobile Sources

#### United States Environmental Protection Agency and National Highway Traffic Safety Administration Joint Rulemaking for Vehicle Standards

In response to the *Massachusetts v. EPA* ruling discussed above, the Bush Administration issued an Executive Order on May 14, 2007, directing the USEPA, the Department of Transportation (DOT), and the Department of Energy (DOE) to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008.

On October 10, 2008, the National Highway Traffic Safety Administration (NHTSA) released a final environmental impact statement analyzing proposed interim standards for passenger cars and light trucks in model years 2011 through 2015. The NHTSA issued a final rule for model year 2011 on March 30, 2009<sup>7</sup>.

On May 7, 2010, the USEPA and the NHTSA issued a final rule regulating fuel efficiency and GHG pollution from motor vehicles for cars and light-duty trucks for model years 2012–2016<sup>8</sup>. On May 21, 2010, President Obama issued a memorandum to the Secretaries of Transportation and Energy, and the Administrators of the USEPA and the NHTSA calling for establishment of additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure<sup>9</sup>. In response to this directive, USEPA and NHTSA issued a Supplemental Notice of Intent announcing plans to propose stringent, coordinated federal greenhouse gas and fuel economy standards for model year 2017-2025 light-duty vehicles<sup>10</sup>. The agencies proposed standards projected to achieve 163 grams/mile of CO<sub>2</sub> in model year 2025, on an average industry fleet wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. California has announced its support of this national program<sup>11</sup>.

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<sup>7</sup> National Highway Traffic Safety Administration, Laws & Regulations, *CARE - Fuel Economy, Average Fuel Economy Standards Passenger Cars and Light Trucks Model Year 2011, Final Rule*, March 23, 2009. Available at: [http://www.nhtsa.gov/DOT/NHTSA/Rulemaking/Rules/Associated%20Files/CAFE\\_Updated\\_Final\\_Rule\\_MY2011.pdf](http://www.nhtsa.gov/DOT/NHTSA/Rulemaking/Rules/Associated%20Files/CAFE_Updated_Final_Rule_MY2011.pdf). Accessed: November, 2014.

<sup>8</sup> United States Environmental Protection Agency, *Light Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, Final Rule*, May 7, 2010. Available at: <https://www.federalregister.gov/articles/2010/05/07/2010-8159/light-duty-vehicle-greenhouse-gas-emission-standards-and-corporate-average-fuel-economy-standards>. Accessed: November, 2014.

<sup>9</sup> Government Printing Office, Federal Register, Vol. 75, No. 101, Presidential Documents, Improving Energy Security, American Competitiveness and Job Creation, and Environmental Protection Through a Transformation of Our Nation's Fleet of Cars and Trucks, May 21, 2010. Available at: <http://www.gpo.gov/fdsys/pkg/FR-2010-05-26/html/2010-12757.htm>. Accessed: November, 2014.

<sup>10</sup> Government Printing Office, Federal Register, Vol. 76, No. 153, Proposed Rules, 2017-2025 Model Year Light-Duty Vehicle GHG Emissions and CAFÉ Standards: Supplemental Notice of Intent, August 9, 2011. Available at: <http://gpo.gov/fdsys/pkg/FR-2011-08-09/pdf/2011-19905.pdf>. Accessed: November, 2014.

<sup>11</sup> California Air Resource Board, *Commitment Letter to National Program*, July 28, 2011. Available at: <http://www.epa.gov/otaq/climate/letters/carb-commitment-ltr.pdf>. Accessed: November, 2014.

The final rule was adopted in October 2012, and NHSTA intends to set standards for model years 2022-2025 in a future rulemaking.<sup>12, 13</sup>

### Heavy-duty Engines and Vehicles Fuel Efficiency Standards

In addition to the regulations applicable to cars and light-duty trucks, on August 9, 2011, the USEPA and the NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks, which applies to vehicles from model year 2014-2018.<sup>14</sup> USEPA and NHTSA have adopted standards for CO<sub>2</sub> emissions and fuel consumption, respectively, tailored to each of three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to USEPA, this program will reduce GHG emissions and fuel consumption for affected vehicles by 6 percent to 23 percent.

### Energy Independence and Security Act

On December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law<sup>15</sup>. Among other key measures, the Act would do the following, which would aid in the reduction of national GHG emissions, both mobile and non-mobile:

1. Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
2. Prescribe or revise standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.
3. While superseded by NHTSA and USEPA actions described above, EISA also set miles per gallon targets for cars and light trucks and directed the NHTSA to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.

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<sup>12</sup> National Highway Traffic Safety Administration, Federal Register, Vol. 77, No. 199, Rules & Regulations, 2012 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, effective December 14, 2012. Available at: <https://federalregister.gov/a/2012-21972>. Accessed: November, 2014.

<sup>13</sup> National Highway Traffic Safety Administration, Corporate Average Fuel Economy Standards, Passenger Cars and Light Trucks, Model Years 2017-2025, Final Environmental Impact Statement, July 2012. Available at: [http://www.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/FINAL\\_EIS.pdf](http://www.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/FINAL_EIS.pdf). Accessed: November, 2014.

<sup>14</sup> United States Environmental Protection Agency, Office of Transportation and Air Quality. EPA and NHTSA Adopt First-Ever Program to Reduce Greenhouse Gas Emissions and Improve Fuel Efficiency of Medium-and Heavy-Duty Vehicles, August 2011. Available at: <http://www.epa.gov/otaq/climate/documents/420f11031.pdf>. Accessed: November, 2014.

<sup>15</sup> Government Printing Office, *Energy Independence and Security Act of 2007*, January 4, 2007. Available at: <http://www.gpo.gov/fdsys/pkg/BILLS-110hr6enr/pdf/BILLS-110hr6enr.pdf>. Accessed: November, 2014.

Additional provisions of the EISA address energy savings in government and public institutions, promoting research for alternative energy, additional research in carbon capture, international energy programs, and the creation of “green jobs.”

## 2.1.2 State

### Assembly Bill 32 (Statewide GHG Reductions)

The California Global Warming Solutions Act of 2006 (AB 32) was signed into law in September 2006 after considerable study and expert testimony before the Legislature. The law instructs the California Air Resources Board (CARB) to develop and enforce regulations for the reporting and verifying of statewide GHG emissions. The Act directed CARB to set a GHG emission limit based on 1990 levels, to be achieved by 2020. The bill set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner<sup>16</sup>.

The heart of the bill is the requirement that statewide GHG emissions be reduced to 1990 levels by 2020. The bill required CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions. CARB accomplished the key milestones set forth in AB 32 including the following:

- June 30, 2007. Identification of discrete early action GHG emissions reduction measures. On June 21, 2007, CARB satisfied this requirement by approving three early action measures<sup>17</sup>. These were later supplemented by adding six other discrete early action measures<sup>18</sup>.
- January 1, 2008. Identification of the 1990 baseline GHG emissions level and approval of a statewide limit equivalent to that level and adoption of reporting and verification requirements concerning GHG emissions. On December 6, 2007, CARB approved a statewide limit on GHG emissions levels for the year 2020 consistent with the determined 1990 baseline<sup>19</sup>.

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<sup>16</sup> Legislative Counsel of California, *California Assembly Bill 32*, September 2006. Available at: [http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab\\_0001-0050/ab\\_32\\_bill\\_20060927\\_chaptered.pdf](http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab_0001-0050/ab_32_bill_20060927_chaptered.pdf). Accessed: November, 2014.

<sup>17</sup> California Air Resources Board, Summary of Board Meeting, Consideration of Recommendations for Discrete Early Actions for Climate Change Mitigation in California, June 21-22, 2007. Available at: <http://www.arb.ca.gov/board/ms/2007/ms062107.pdf>. Accessed: November, 2014.

<sup>18</sup> California Air Resources Board, Summary of Board Meeting, Public Meeting to Consider Approval of Additions to Reduce Greenhouse Gas Emissions under the California Global Warming Solutions Act of 2006 and to Discuss Concepts for Promoting and Recognizing Voluntary Early Actions, October 25-26, 2007. Available at: <http://www.arb.ca.gov/board/ms/2007/ms102507.pdf>. Accessed: November, 2014.

<sup>19</sup> California Air Resources Board, *Staff Report, California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit*, November 16, 2007. Available at: [http://www.arb.ca.gov/cc/inventory/pubs/reports/staff\\_report\\_1990\\_level.pdf](http://www.arb.ca.gov/cc/inventory/pubs/reports/staff_report_1990_level.pdf). Accessed: November, 2014.)

- January 1, 2009. Adoption of a scoping plan for achieving GHG emission reductions. On December 11, 2008, CARB adopted Climate Change Scoping Plan: A Framework for Change (Scoping Plan), discussed in more detail below<sup>20</sup>.
- January 1, 2010. Adoption and enforcement of regulations to implement the “discrete” actions. Several early action measures have been adopted and became effective on January 1, 2010<sup>21, 22</sup>.
- January 1, 2011. Adoption of GHG emissions limits and reduction measures by regulation. On October 28, 2010, CARB released its proposed cap-and-trade regulations, which would cover sources of approximately 85 percent of California's GHG emissions<sup>23</sup>. CARB's Board ordered CARB's Executive Director to prepare a final regulatory package for cap-and-trade on December 16, 2010<sup>24</sup>.
- January 1, 2012. GHG emissions limits and reduction measures adopted in 2011 become enforceable.

As noted above, on December 11, 2008, CARB adopted the Scoping Plan to achieve the goals of AB 32. The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions for various categories of emissions. CARB determined that achieving the 1990 emission level would require a reduction of GHG emissions of by approximately 28.5 percent to achieve in 2020 emissions levels in the absence of new laws and regulations (referred to as “business as usual” or “No Action Taken” (NAT). The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all CARB and Climate Action Team early actions and additional GHG reduction measures by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program. The key elements of the Scoping Plan include<sup>25</sup>.

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewable energy mix of 33 percent;

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<sup>20</sup> California Air Resources Board, *Climate Change Scoping Plan*, December 2008. Available at: [http://www.arb.ca.gov/cc/scopingplan/document/adopted\\_scoping\\_plan.pdf](http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf). Accessed: November, 2014.

<sup>21</sup> California Air Resources Board, Summary of Board Meeting, Consideration of Recommendations for Discrete Early Actions for Climate Change Mitigation in California, June 21-22, 2007. Available at: <http://www.arb.ca.gov/board/ms/2007/ms062107.pdf>. Accessed: November, 2014.

<sup>22</sup> California Air Resources Board, Summary of Board Meeting, Public Meeting to Consider Approval of Additions to Reduce Greenhouse Gas Emissions under the California Global Warming Solutions Act of 2006 and to Discuss Concepts for Promoting and Recognizing Voluntary Early Actions, October 25-26, 2007. Available at: <http://www.arb.ca.gov/board/ms/2007/ms102507.pdf>. Accessed: November, 2014.

<sup>23</sup> California Air Resources Board, *Proposed Regulation to Implement the California Cap-and-Trade Program*, December 16, 2010. Available at: <http://www.arb.ca.gov/regact/2010/capandtrade10/capandtrade10.htm>. Accessed: November, 2014.

<sup>24</sup> California Air Resources Board, *California Cap-and-Trade Program, Resolution 10-42*, December 16, 2010. Available at: <http://www.arb.ca.gov/regact/2010/capandtrade10/res1042.pdf>. Accessed: November, 2014.

<sup>25</sup> California Air Resources Board, *Climate Change Scoping Plan*, December 2008. Available at: [http://www.arb.ca.gov/cc/scopingplan/document/adopted\\_scoping\\_plan.pdf](http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf). Accessed: November, 2014.

- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85 percent of California's GHG emissions;
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation.

In connection with preparation of the supplement to the Functional Equivalent Document, CARB released revised estimates of the expected 2020 emission reductions in consideration of the economic recession and the availability of updated information from development of measure-specific regulations. Incorporation of revised estimates in consideration of the economic recession reduced the projected 2020 emissions from 596 metric tonnes of CO<sub>2</sub> equivalent (MTCO<sub>2</sub>e) to 545 MMTCO<sub>2</sub>e<sup>26</sup>. Under this scenario, achieving the 1990 emissions level would require a reduction of GHG emissions of 118 MMTCO<sub>2</sub>e, or 21.7 percent (down from 28.5 percent), to achieve in 2020 emissions levels in the "business as usual" condition. The 2020 AB 32 baseline was also updated to account for measures incorporated into the inventory, including Pavley (vehicle model-years 2009 - 2016) and the renewable portfolio standard (12% - 20%). Inclusion of these measures further reduced the 2020 baseline to 507 MMTCO<sub>2</sub>e. As a result, based on both the economic recession and the availability of updated information from development of measure-specific regulations, achieving the 1990 emission level would now require a reduction of GHG emissions of 80 MMTCO<sub>2</sub>e or a reduction by approximately 16 percent (down from 28.5 percent) to achieve in 2020 emissions levels in the "business as usual" or NAT condition<sup>27, 28</sup>.

On October 1, 2013, CARB released a discussion draft first update to the Scoping Plan. The discussion draft recalculates 1990 GHG emissions using IPCC Fourth Assessment Report released in 2007. Using the AR4 global warming potentials GWPs, the 427 MMTCO<sub>2</sub>e 1990

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<sup>26</sup> California Air Resources Board, *Status of Scoping Plan Recommended Measures*, July 25, 2011. Available at: [http://www.arb.ca.gov/cc/scopingplan/status\\_of\\_scoping\\_plan\\_measures.pdf](http://www.arb.ca.gov/cc/scopingplan/status_of_scoping_plan_measures.pdf). Accessed: November, 2014.

<sup>27</sup> California Air Resources Board, *Status of Scoping Plan Recommended Measures*, July 25, 2011. Available at: [http://www.arb.ca.gov/cc/scopingplan/status\\_of\\_scoping\\_plan\\_measures.pdf](http://www.arb.ca.gov/cc/scopingplan/status_of_scoping_plan_measures.pdf). Accessed: November, 2014.

<sup>28</sup> California Air Resources Board, *Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document* Available at: [http://www.arb.ca.gov/cc/scopingplan/document/final\\_supplement\\_to\\_sp\\_fed.pdf](http://www.arb.ca.gov/cc/scopingplan/document/final_supplement_to_sp_fed.pdf). Accessed: December, 2014.



emissions level and 2020 GHG emissions limit would be slightly higher, at 431 MMTCO<sub>2</sub>e<sup>29</sup>. Based on the revised estimates of expected 2020 emissions identified in the 2011 supplement to the Functional Environmental Document and updated 1990 emissions levels identified in the draft first update to the Scoping Plan, achieving the 1990 emission level would require a reduction of 76 MMTCO<sub>2</sub>e (down from 507 MMTCO<sub>2</sub>e) or a reduction by approximately 15 percent (down from 28.5 percent) to achieve in 2020 emissions levels in the “business as usual” or NAT condition<sup>30, 31, 32</sup>.

### 2.1.2.1 Energy-Related Sources

#### Renewable Portfolio Standards (SB 1078, SB 107 and SBX1-2)

Established in 2002 under Senate Bill (SB) 1078, and accelerated in 2006 under SB 107 and again in 2011 under SBX1-2, California's RPS requires retail sellers of electric services to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020<sup>33, 34, 35</sup>. The 33 percent standard is consistent with the RPS goal established in the Scoping Plan<sup>36</sup>. As interim measures, the RPS requires 20 percent of retail sales to be sourced from renewable energy by 2013, and 25 percent by 2016. Initially, the RPS provisions applied to investor-owned utilities, community choice aggregators, and electric service providers. SBX1-2 added, for the first time, publicly-owned utilities to the entities subject to RPS<sup>37</sup>. The expected growth in RPS to meet the standards in effect in 2008 is not reflected in the “business as usual” (BAU) calculation in the AB 32 Scoping Plan, discussed below. In other

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<sup>29</sup> California Air Resources Board, *Climate Change Scoping Plan First Update, Discussion Draft for Public Review and Comment*, October 2013 Available at:

[http://www.arb.ca.gov/cc/scopingplan/2013\\_update/discussion\\_draft.pdf](http://www.arb.ca.gov/cc/scopingplan/2013_update/discussion_draft.pdf). Accessed: November, 2014.

<sup>30</sup> California Air Resources Board, *Status of Scoping Plan Recommended Measures*, July 25, 2011. Available at: [http://www.arb.ca.gov/cc/scopingplan/status\\_of\\_scoping\\_plan\\_measures.pdf](http://www.arb.ca.gov/cc/scopingplan/status_of_scoping_plan_measures.pdf). Accessed: December, 2014.

<sup>31</sup> California Air Resources Board, *Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document* Available at: [http://www.arb.ca.gov/cc/scopingplan/document/final\\_supplement\\_to\\_sp\\_fed.pdf](http://www.arb.ca.gov/cc/scopingplan/document/final_supplement_to_sp_fed.pdf). Accessed: November, 2014.

<sup>32</sup> California Air Resources Board, *Climate Change Scoping Plan First Update, Discussion Draft for Public Review and Comment*, October 2013 Available at:

[http://www.arb.ca.gov/cc/scopingplan/2013\\_update/discussion\\_draft.pdf](http://www.arb.ca.gov/cc/scopingplan/2013_update/discussion_draft.pdf). Accessed: November, 2014.

<sup>33</sup> Legislative Counsel of California, *Senate Bill 1078*, September 2002. Available at:

<http://www.energy.ca.gov/portfolio/documents/documents/SB1078.PDF>. Accessed: November, 2014.

<sup>34</sup> Legislative Counsel of California, *Senate Bill 1368*, September 2006. Available at:

[http://www.energy.ca.gov/emission\\_standards/documents/sb\\_1368\\_bill\\_20060929\\_chaptered.pdf](http://www.energy.ca.gov/emission_standards/documents/sb_1368_bill_20060929_chaptered.pdf).

Accessed: November, 2014.

<sup>35</sup> California Air Resources Board, et al., v. Association of Irrigated Residents, et al., (2011). Available at:

[http://www.crpe-ej.org/crpe/images/stories/7.25.11\\_Petition\\_for\\_Review\\_FINAL\\_with\\_Exhibits\\_smaller\\_version.pdf](http://www.crpe-ej.org/crpe/images/stories/7.25.11_Petition_for_Review_FINAL_with_Exhibits_smaller_version.pdf).

Accessed: November, 2014.

<sup>36</sup> California Air Resources Board, *Climate Change Scoping Plan*, December 2008. Available at:

[http://www.arb.ca.gov/cc/scopingplan/document/adopted\\_scoping\\_plan.pdf](http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf). Accessed: November, 2014.

<sup>37</sup> California Air Resources Board, et al., v. Association of Irrigated Residents, et al., 2011. Available at:

[http://www.crpe-j.org/crpe/images/stories/7.25.11\\_Petition\\_for\\_Review\\_FINAL\\_with\\_Exhibits\\_smaller\\_version.pdf](http://www.crpe-j.org/crpe/images/stories/7.25.11_Petition_for_Review_FINAL_with_Exhibits_smaller_version.pdf).

Accessed: November, 2014.

words, the Scoping Plan's BAU 2020 does not take credit for implementation of RPS that occurred after its adoption<sup>38</sup>.

### GHG Emissions Standard for Baseload Generation (SB 1368)

Senate Bill 1368 (SB 1368) (September 29, 2006) prohibits any retail seller of electricity in California from entering into a long-term financial commitment for baseload generation if the GHG emissions are higher than those from a combined-cycle natural gas power plant. This performance standard applies to electricity generated both within and outside of California, and to publicly-owned as well as investor-owned electric utilities.

### **2.1.2.2 Mobile Sources**

#### Mobile Source Reductions (AB 1493)

Assembly Bill 1493 ("the Pavley Standard" or AB 1493) required CARB to adopt regulations by January 1, 2005, to reduce GHG emissions from non-commercial passenger vehicles and light-duty trucks of model year 2009 through 2016. The bill also required the California Climate Action Registry to develop and adopt protocols for the reporting and certification of GHG emissions reductions from mobile sources for use by CARB in granting emission reduction credits. The bill authorizes CARB to grant emission reduction credits for reductions of GHG emissions prior to the date of enforcement of regulations, using model year 2000 as the baseline for reduction.

In 2004, CARB applied to the USEPA for a waiver under the federal Clean Air Act to authorize implementation of these regulations. The waiver request was formally denied by the USEPA in December 2007 after California filed suit to prompt federal action. In January 2008, the State Attorney General filed a new lawsuit against the USEPA for denying California's request for a waiver to regulate and limit GHG emissions from these vehicles. In January 2009, President Barack Obama issued a directive to the USEPA to reconsider California's request for a waiver. On June 30, 2009, the USEPA granted the waiver to California for its GHG emission standards for motor vehicles. As part of this waiver, USEPA specified the following provision: CARB may not hold a manufacturer liable or responsible for any noncompliance caused by emission debits generated by a manufacturer for the 2009 model year. CARB has adopted a new approach to passenger vehicles (cars and light trucks), by combining the control of smog-causing pollutants and GHG emissions into a single coordinated package of standards. The new approach also includes efforts to support and accelerate the numbers of plug-in hybrids and zero-emission vehicles in California. These standards will apply to all passenger and light duty trucks used by customers, employees of and deliveries to the proposed Project.

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<sup>38</sup> California Air Resources Board, *Climate Change Scoping Plan Appendices, Vol. I*, December 2008. Available at: [http://www.arb.ca.gov/cc/scopingplan/document/appendices\\_volume1.pdf](http://www.arb.ca.gov/cc/scopingplan/document/appendices_volume1.pdf). Accessed: November, 2014.

### Low Carbon Fuel Standard

Executive Order S-01-07 (January 18, 2007) requires a 10 percent or greater reduction in the average fuel carbon intensity for transportation fuels in California regulated by CARB. CARB identified the LCFS as a Discrete Early Action item under AB 32, and the final resolution (09-31) was issued on April 23, 2009 (CARB 2009)<sup>39</sup>. In 2009, CARB approved for adoption the LCFS regulation, which became fully effective in April 2010 and is codified at Title 17, CCR, Sections 95480-95490. The LCFS will reduce greenhouse gas emissions by reducing the carbon intensity of transportation fuels used in California by at least 10 percent by 2020. Carbon intensity is a measure of the GHG emissions associated with the various production, distribution, and use steps in the “lifecycle” of a transportation fuel. On December 29, 2011, the U.S. District Court for the Eastern District of California issued several rulings in the federal lawsuits challenging the LCFS. One of the district court's rulings preliminarily enjoined the CARB from enforcing the regulation. In January 2012, CARB appealed that decision to the Ninth Circuit Court of Appeals. On September 18, 2013, the Ninth Circuit issued its decision affirming the District Court's conclusion that LCFS ethanol and initial crude-oil provisions are not facially discriminatory, but remanded to the district court to determine whether the LCFS ethanol provisions are discriminatory in purpose and effect. Additionally, the Ninth Circuit remanded to the District Court with instructions to vacate the preliminary injunction against CARB's enforcement of the regulation.

### Clean Cars

In January 2012, CARB approved the Advanced Clean Cars Program, a new emissions-control program for model year 2017 through 2025. The program combines the control of smog, soot, and GHGs with requirements for greater numbers of zero-emission vehicles. By 2025, when the rules will be fully implemented, the new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions.

### **2.1.2.3 Building Standards**

#### Green Building Code (California Code of Regulations, Title 24)

Energy Conservation Standards for new residential and commercial buildings were originally adopted by the California Energy Resources Conservation and Development Commission in June 1977 and most recently revised in 2008 (Title 24 CCR Part 6 [CCR, 2008]). In general, Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The 2006 Appliance Efficiency Regulations (Title 20 CCR §1601-1608), dated December 2006, were adopted by the California Energy Commission on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally-regulated appliances and non-federally regulated appliances. While these regulations are now often seen

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<sup>39</sup> California Air Resources Board, Initial Statement of Reason for Proposed Regulation for The Management of High Global Warming Potential Refrigerant for Stationary Sources, October 23, 2009. Available at: <http://www.arb.ca.gov/regact/2009/gwprmp09/isorref.pdf>. Accessed: November, 2014.

as “business as usual” in California, they do exceed the standards imposed by any other state and reduce GHG emissions by reducing energy demand.

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (proposed Part 11, Title 24) was adopted as part of the California Building Standards Code (Title 24 CCR). Part 11 establishes voluntary standards on planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. Some of these standards have become mandatory in the 2010 edition of the Part 11 Code<sup>40</sup>.

The California Energy Commission has opened a public process and rulemaking proceeding to adopt changes to the 2013 Building Energy Efficiency Standards contained in Title 24 CCR Part 6 (also known as the California Energy Code), and associated administrative regulations in Part 1 (collectively referred to here as the Standards). The proposed amended standards will be adopted in 2014. The 2013 Building Energy Efficiency Standards are 25 percent more efficient than previous standards for residential construction and 30 percent better for non-residential construction. The standards, which take effect on January 1, 2014, will offer builders better windows, insulation, lighting, ventilation systems and other features that reduce energy consumption in homes and businesses.

## 2.1.3 Regional

### 2.1.3.1 South Coast Air Quality Management District Policies

#### California Environmental Quality Act Guidelines and Proposed GHG Thresholds

SCAQMD is principally responsible for comprehensive air pollution control in the Basin, which includes Los Angeles, Orange, and the urbanized portions of Riverside and San Bernardino Counties, including the Project site. SCAQMD works directly with Southern California Association of Governments, County transportation commissions, and local governments and cooperates actively with all federal and State government agencies to regulate air quality.

In April 2008, SCAQMD convened a Working Group to develop GHG significance thresholds. On December 5, 2008, the SCAQMD Governing Board adopted its staff proposal for an interim California Environmental Quality Act (CEQA) GHG significance threshold for projects where the SCAQMD is the lead agency. The Board has, to date, only adopted an interim threshold of 10,000 MTCO<sub>2</sub>E per year for industrial stationary source projects<sup>41</sup>. For all other projects, SCAQMD staff proposed a multiple tier analysis to determine the appropriate threshold to be

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<sup>40</sup> California Building Standards Commission, *2010 California Green Building Standards Code, California Code of Regulations, Title 24, Part 11*, effective January 1, 2011. Available at: <http://www.bsc.ca.gov/Home/CALGreen.aspx>. Accessed: November, 2014.

<sup>41</sup> South Coast Air Quality Management District, Board Meeting Date: December 5, 2008, Agenda No. 31, Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans for use by the AQMD website. Available at: <http://www.aqmd.gov/hb/2008/December/081231a.htm>. Accessed: November, 2014.

used. The draft proposal suggests the following tiers: Tier 1 is any applicable CEQA exemptions, Tier 2 is consistency with a GHG reduction plan, Tier 3 is a screening value or bright line, Tier 4 is a performance based standard, and Tier 5 is GHG mitigation offsets<sup>42</sup>.

According to the presentation given at the September 28, 2010 Working Group meeting, SCAQMD staff reviewed the tiered significance threshold approach<sup>43</sup>. The proposed tiers are as follows:

- **Tier 1:** Determine if CEQA categorical exemptions are applicable. If not move to Tier 2;
- **Tier 2:** Consider whether or not the proposed project is consistent with a locally adopted GHG reduction plan (often called a Climate Action Plan) that has gone through public hearings and CEQA review, which has an approved inventory that includes monitoring, etc. If not move to Tier 3;
- **Tier 3:** For all land use types, if projects are less than 3,000 metric tonnes/year of carbon dioxide equivalents (MTCO<sub>2</sub>e/yr), the project is presumed to be less than significant for GHGs. If the project exceeds 3,000 metric tonnes of MTCO<sub>2</sub>e/yr, move to Tier 4. More specific screening thresholds were also provided, which include 1,400 MTCO<sub>2</sub>e/yr for commercial projects and 3,500 MTCO<sub>2</sub>e/yr for residential and mixed use projects. These thresholds were based on a review of the Office of Planning and Research database which included 711 CEQA projects using a 90% capture approach;
- **Tier 4:** The proposed performance standards include three options:
  1. Percent Emission Reduction Target (no further recommendation);
  2. Early Implementation of Applicable AB 32 Scoping Plan Measures (incorporated into option 3); and
  3. SCAQMD Efficiency Target.

For option 3, there are targets for 2020 and 2035, using an approach similar to the Bay Area Air Quality District Thresholds. The proposed 2020 target is:

- 4.8 MT/year CO<sub>2</sub>e per service population for project level threshold (land use employment only); and
- 6.6 MT/year CO<sub>2</sub>e per service population for plan level threshold.

The proposed 2035 target is:

- 3.0 MT/year CO<sub>2</sub>e per service population for project level threshold;
- 4.1 MT/year CO<sub>2</sub>e per service population for plan level threshold; and

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<sup>42</sup> South Coast Air Quality Management District, Board Meeting Date: December 5, 2008, Agenda No. 31, Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans for use by the AQMD website. Available at: <http://www.aqmd.gov/hb/2008/December/081231a.htm>. Accessed: November, 2014.

<sup>43</sup> SCAQMD 2010. CEQA Significance Thresholds Working Group Meeting #15. September 28. Available at: <http://www.aqmd.gov/ceqa/handbook/GHG/2010/sept28mtg/sept29.html>. Accessed: November, 2014.

- Incorporate Sustainable Communities and Climate Protection Act of 2008 or Senate Bill 375 (SB 375) regional targets.
- **Tier 5:** Off-site mitigation for life of project (30 years), if this threshold is to be used, GHG emissions must be mitigated to less than the Tier 3 screening significance threshold. The SCAQMD clarified that offsets should have a 30-year project life, should be real, quantifiable, verifiable, and surplus and will be considered in the following prioritized manner:
  - Project design feature/onsite reduction measures;
  - Offsite within neighborhood;
  - Offsite within district;
  - Offsite within state;
  - Offsite out of state; and
  - Substitution allowed via enforceable commitment (e.g. when an offset project ends prematurely).

If the proposed project cannot meet any of the Tiers, it is presumed to be significant for GHG emissions.

The Tier 4 percent emission reduction target is based on a percent reduction target that is based on consistency with AB 32 as it was based on the same numeric reductions calculated in the Scoping Plan to reach 1990 levels by 2020.

The Working Group has not convened since the fall of 2010. As of October 2013, the proposal has not been considered or approved for use by the SCAQMD Board. In the meantime, no GHG significance thresholds are approved for use in the Basin.

## 2.2 Significance Threshold

This Greenhouse Gas Technical Report assesses significance by analyzing consistency with AB 32 through evaluating the Project's GHG emissions inventory as compared to SCAQMD's draft efficiency target (4.8 MT/year CO<sub>2</sub>e per service population) based on the Project's emissions and service population.<sup>44</sup> The District's efficiency target is only in draft form; nonetheless, the target is utilized to help inform the lead agency and public of the Project's significance. Since AB 32 set the 2020 GHG reduction goal, this analysis evaluates against the 2020 SCAQMD efficiency target.

The District's draft definition of "service population" leads to a negative bias for projects with high numbers of "customers" or "visitors," such as projects with non-residential uses like retail, hotels, and hospitals. With the District's draft approach, the emissions from customers and

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<sup>44</sup> SCAQMD 2010. CEQA Significance Thresholds Working Group Meeting #15. September 28. Available at: <http://www.aqmd.gov/ceqa/handbook/GHG/2010/sept28mtg/sept29.html>. Accessed: November, 2014.

visitors are included in the total emissions, but the customers and visitors are excluded from the service population. This analysis conservatively includes all emissions.

### 3 Greenhouse Gas Emissions Inventory

This section describes the methodology that Ramboll Environ used to develop the GHG emissions inventories associated with the Project, which include construction emissions and operational emissions. Sub-categories of GHG operational emissions include: area sources, energy use, water and wastewater, solid waste, and mobile sources. Legislation and rules regarding climate change, as well as the scientific understanding of the extent to which different activities emit GHGs, continue to evolve; as such, the inventories in this report are a reflection of the guidance and knowledge currently available.

#### 3.1 Units of measurement: Tonnes of Carbon Dioxide and Carbon Dioxide Equivalents

The term “GHGs” includes gases that contribute to the natural greenhouse effect, such as CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, and water, as well as gases that are only man-made and that are emitted through the use of modern industrial products, such as hydrofluorocarbons and chlorofluorocarbons. The most important greenhouse gas in human-induced global warming is CO<sub>2</sub>. While many gases have much higher GWPs than CO<sub>2</sub>, CO<sub>2</sub> is emitted in such vastly higher quantities that it accounts for 85% of the GWP of all GHGs emitted by the United States<sup>45</sup>.

The effect each of these gases has on global warming is a combination of the volume of their emissions and their GWP. GWP indicates, on a pound for pound basis, how much a gas will contribute to global warming relative to how much warming would be caused by the same mass of CO<sub>2</sub>. CH<sub>4</sub> and N<sub>2</sub>O are substantially more potent than CO<sub>2</sub>, with GWPs of 21 and 310, respectively. GHG emissions are typically measured in terms of mass of CO<sub>2</sub>e. CO<sub>2</sub>e are calculated as the product of the mass of a given GHG and its specific GWP.

In many sections of this report, including the final summary sections, emissions are presented in units of CO<sub>2</sub>e either because the GWPs of CH<sub>4</sub> and N<sub>2</sub>O were accounted for explicitly, or the CH<sub>4</sub> and N<sub>2</sub>O are assumed to contribute a negligible amount of GWP when compared to the CO<sub>2</sub> emissions from that particular emissions category.

In this report, a tonne refers to metric tonnes (1,000 kilograms). Additionally, exact totals presented in all tables and report sections may not equal the sum of components due to independent rounding of numbers.

#### 3.2 Methodology and Resources

##### **CalEEMod™**

Ramboll Environ primarily utilized the California Emission Estimator Model version 2013.2.2 (CalEEMod™)<sup>46</sup> to assist in quantifying the GHG emissions in the inventories presented in this report for the Project. CalEEMod™ is a statewide program designed to calculate both criteria

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<sup>45</sup> Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2004, U.S. Environmental Protection Agency. Available at: <http://www.epa.gov/climatechange/ghgemissions/usinventoryreport/archive.html>. Accessed: December, 2014.

<sup>46</sup> SCAQMD, 2013, California Emissions Estimator Model. Available at: <http://www.CalEEMod.com/>. Accessed: December, 2014.



and GHG emissions from development projects in California. This model was developed under the auspices of the SCAQMD and received input from other California air districts, and is currently supported by several lead agencies for use in quantifying the emissions associated with development projects undergoing environmental review. CalEEMod™ utilizes widely accepted models for emission estimates combined with appropriate default data that can be used if site-specific information is not available. These models and default estimates use sources such as the USEPA AP-42 emission factors<sup>47</sup>, CARB's on-road and off-road equipment emission models such as the Emission FACtor model (EMFAC) and the Emissions Inventory Program model (OFFROAD), and studies commissioned by California agencies such as the California Energy Commission (CEC) and CalRecycle.

CalEEMod™ is based upon the Air Resources Board (ARB)-approved Off-Road and On-Road Mobile-Source Emission Factor models (OFFROAD and EMFAC, respectively), and is designed to estimate construction and operational emissions for land use development projects and allows for the input of project specific information. OFFROAD<sup>48</sup> is an emissions factor model used to calculate emission rates from off-road mobile sources (e.g., construction equipment, agricultural equipment). EMFAC<sup>49</sup> is an emissions factor model used to calculate emissions rates from on-road vehicles (e.g., passenger vehicles, haul trucks). The off-road diesel emission factors used by CalEEMod™ are based on the ARB OFFROAD2011 program.

CalEEMod™ provides a simple platform to calculate both construction emissions and operational emissions from a land use project. It calculates both the daily maximum and annual average for criteria pollutants as well as total or annual greenhouse gas (GHG) emissions. The model also provides default values for water and energy use. Specifically the model aids the user in the following calculations:

- Short term construction emissions associated with demolition, site preparation, grading, building, coating, and paving from off-road construction equipment, on-road mobile equipment associated with workers, vendors, and hauling, and fugitive dust associated with grading, demolition, truck loading, and roads, and volatile emissions of reactive organic gasses (ROG) from architectural coating and paving. Fugitive dust from windblown sources such as storage piles are not quantified in CalEEMod™, which is consistent with approaches taken in other comprehensive models.
- Operational emissions associated with the fully built out land use development, such as on-road mobile vehicle traffic generated by the land uses, fugitive dust associated with roads, volatile emissions of ROG from architectural coating, off-road emissions from

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<sup>47</sup> The USEPA maintains a compilation of Air Pollutant Emission Factors and process information for several air pollution source categories. The data is based on source test data, material balance studies, and engineering estimates. Available at: <http://epa.gov/ttnchie1/ap42/>. Accessed: November, 2014.

<sup>48</sup> CARB, 2011. Off Road Mobile Source Emission factors. Available at: <http://www.arb.ca.gov/msei/msei.htm>. Accessed: November, 2014.

<sup>49</sup> CARB, 2013. EMFAC 2011 Release. Available at: <http://www.arb.ca.gov/msei/modeling.htm>. Accessed: November, 2014.

landscaping equipment, volatile emissions of ROG from consumer products and cleaning supplies, wood stoves and hearth usage, natural gas usage in the buildings, electricity usage in the buildings, water usage by the land uses, and solid waste disposal by the land uses.

- One-time vegetation sequestration changes, such as permanent vegetation land use changes and new tree plantings.

Mitigation impacts to both short-term construction and operational emissions as described in California Air Pollution Control Officers Association (CAPCOA)'s Quantifying Greenhouse Gas Mitigation Measures<sup>50</sup>. In addition, CalEEMod™ contains default values and existing regulation methodologies to use in each specific local air district region. Appropriate statewide default values can be utilized if regional default values are not defined. Ramboll Environ used default factors for Los Angeles – South Coast County area that is within the SCAQMD jurisdiction for the GHG emission inventory, unless otherwise noted in the methodology descriptions below.

Ramboll Environ directly or indirectly relied on emissions estimation guidance from government-sponsored organizations, government-commissioned studies of energy use patterns, energy surveys by other consulting firms, Project specific resource management studies (e.g., Traffic study, Water Supply Assessment, and Signage Energy Consumption Analysis), and emission estimation software as described above. In cases as noted below, third-party studies were also relied upon to support analyses and assumptions made outside of the approach described above.

### **3.3 Indirect Greenhouse Gas Emissions from Electricity Use**

The indirect GHG emissions created as a result of electricity use are based on the following methodology. Indirect emissions, such as when electricity is used in a building, are typically due to electricity generation from offsite power plant locations. For this Project, electrical power will be supplied to the Project site by Los Angeles Department of Water and Power (LADWP).

Using CalEEMod™, the electricity intensities are multiplied by the emission intensity factors for the GHGs and are classified as indirect emissions. Emission intensity factors are GHG emission rates from a given source relative to the intensity of a specific activity in term of the amount of GHG released per megawatt of energy produced. The default electricity intensity for LADWP in CalEEMod™ for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O are 1,227.89, 0.029, and 0.00617 pounds (lbs) per megawatt-hour, respectively. The CO<sub>2</sub> default factor is based on 2007 emission factor listed in CARB's Local Government Operations Protocol. The CH<sub>4</sub> and N<sub>2</sub>O default factors are based on CARB's and E-Grid values.

For this Project, the CalEEMod CO<sub>2</sub> intensity factor is modified based on the average factor from 2006 and 2007 to account for the RPS. The intensity factors for total energy delivered were estimated by multiplying the percentage of energy delivered from non-renewable energy by the CO<sub>2</sub> emissions per total non-renewable energy metric calculated. Total energy delivery and total

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<sup>50</sup> CAPCOA. Quantifying Greenhouse Gas Mitigation Measures. August 2010. Available at: <http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf>.

CO<sub>2</sub> emissions are provided in LADWP/Utility Protocol (PUP) Reports. The CO<sub>2</sub> intensity factor presented in this analysis is consistent with the 33% RPS for 2020. The estimate provided here and the PUP reports issued by LADWP assume that renewable energy sources do not result in any CO<sub>2</sub> emissions. CalEEMod™ emission intensity factors for CH<sub>4</sub> and N<sub>2</sub>O were used for this Project as a conservative estimate for these emissions.

Details regarding the specific methodologies used by CalEEMod™ can be found in the CalEEMod™ User's Guide and associated appendices<sup>51</sup>. The CalEEMod™ output files are provided for reference in Appendix A to this report.

### **3.4 One-Time Emissions**

One-time emissions are those emissions that are not reoccurring over the life of the project. This includes emissions associated with construction and emissions associated with land use changes. The emission estimation methodology for both construction and vegetation changes are described in this section. The maximum daily emissions are not expected to be higher than that estimated given the conservative assumptions included in this analysis.

#### **3.4.1 Construction Emissions**

This section describes the estimation of GHG emissions from construction activities at the Project Site. The proposed plan for constructing the Project is anticipated to happen from 2016 to 2021.

The major construction phases included in this analysis are:

- Demolition: involves tearing down of buildings or structures.
- Site Preparation: involves clearing vegetation (grubbing and tree/stump removal) and stones prior to grading.
- Grading: involves the cut and fill of land to ensure the proper base and slope for the construction foundation.
- Building Construction: involves the construction of structures and buildings.
- Architectural Coating: involves the application of coatings to both the interior and exterior of buildings or structures.
- Paving: involves the laying of concrete or asphalt such as in parking lots or roads.

GHG emissions from these construction phases are largely attributable to fuel use from construction equipment and worker commuting. Ramboll Environ used CalEEMod™ version 2013.2.2 to assist in quantification of the construction emissions. The construction schedule, off-road equipment lists and equipment specifications, and daily trip counts for workers, vendors, and haul trucks as estimated for the Project are included in the analysis. CalEEMod™ default values were used for equipment and vehicle emission factors, equipment load factors

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<sup>51</sup> SCAQMD, 2013, California Emissions Estimator Model User's Guide. Version 2013.2.2 July 2013 Available at: <http://www.CalEEMod.com/>. Accessed: November 2014.

and vehicle trip lengths. The analysis assumes that all OFFROAD construction equipment will be Tier 3 equipment. The Project construction will likely occur in phases; however, this analysis assumes a single continuous phase for construction, which is expected to equivalently represent the total estimated GHG emissions. Based on the conservative assumptions in this analysis, the reported results represent the maximum level of construction activity that is expected to occur during construction of the Project.

Ramboll Environ’s analysis was based on a mix of Project specific estimates and CalEEMod defaults for the numbers and types of equipment that will be used in the construction of the Project as well as the duration of the different construction phases. The GHG calculations are intended to estimate long-term emissions. The construction land use in acreage, schedule and equipment lists, and grading information, are shown in Tables 4 through 6, respectively.

### 3.4.1.1 Emissions from Construction Equipment

The emission calculations associated with construction equipment are from off-road equipment engine use based on the equipment list and phase length. The fugitive emissions from off-road equipment performing work are also included in this analysis.

Since the majority of the off-road construction equipment used for construction projects are diesel fueled, CalEEMod™ assumes all of the equipment operates on diesel fuel. The SCAQMD construction survey is used to estimate default equipment lists based on total project acreage as calculated from the acreage entered on the land use screen. If the acreage is in between the acreage in the survey, the next highest acreage tier is used. The calculations associated with this screen include the running exhaust emissions from off-road equipment. Since the equipment is assumed to be diesel, there are no starting or evaporative emissions associated with the equipment as these are de minimis for diesel-fueled equipment. CalEEMod™ calculates the exhaust emissions based on CARB’s OFFROAD2011 methodology using the equation presented below<sup>52</sup>.

$$Emissions_{Diesel} = \sum_i (EF_i \times Pop_i \times AvgHP_i \times Load_i \times Activity_i)$$

Where:

- EF = Emission factor in grams per horsepower-hour (g/bhp-hr) as processed from OFFROAD2011
- Pop = Population, or the number of pieces of equipment
- AvgHp = Maximum rated average horsepower
- Load = Load factor
- Activity = Hours of operation
- i = equipment type

The GHG emissions associated with off-road construction equipment are shown in Table 7.

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<sup>52</sup> SCAQMD, 2013, California Emissions Estimator Model User’s Guide, Appendix A, pages 5-6. Version 2013.2.2. July 2013. Available at: <http://www.CalEEMod.com/>. Accessed: November 2014.

### 3.4.1.2 Greenhouse Gas Emissions from On-Road Trips

Construction generates on-road vehicle exhaust, evaporative, and dust emissions from personal vehicles for worker and vendor commuting, and trucks for soil and material hauling. These emissions are based on the number of trips and vehicle miles traveled (VMT) along with emission factors from EMFAC2011.

Running GHG emissions from tire and brake wear were divided by the VMT of each respective vehicle class from each scenario year and adjusted for unit conversions to derive emission factors in units of grams per VMT. All other emissions (including evaporative) were divided by the number of trips to derive emission factors in units of grams per trip.

For all CO<sub>2</sub> emissions (running, startup, and idling), emission reductions due to Pavley I were applied to light-duty auto, LDT1 (0 - 3,750 pounds [lb] light-duty truck), LDT2 (3751 – 5750 lb light-duty truck), and medium-duty truck for each vehicle model year, and summed to arrive at the total CO<sub>2</sub> emissions for each scenario year. Reductions due to Low Carbon Fuel Standards were further applied to CO<sub>2</sub> emission factors after adjustments from Pavley I for scenario years 2011 and after. The Pavley standard was introduced pursuant to AB 1493, to reduce the GHG emissions in new model passenger vehicles, pick-up trucks, and sports utility vehicles. The reductions from Pavley were applied per the emission factors as included in CalEEMod™ and described in Appendix A of the CalEEMod™ users guide. The Low Carbon Fuel Standards was introduced as a pursuant to the California Global Warming Solutions Act of 2006. It imposes fuel requirements on fuel that will be sold in California, which will decrease GHG emissions, by reducing the full fuel-cycle, and the carbon intensity of the transportation fuel pool in California. Reductions due to Low Carbon Fuel Standards were further applied to CO<sub>2</sub> emission factors after adjustments from Pavley I for scenario years 2011 and after. The reductions from LCFS were applied as included in CalEEMod™ and described in Appendix A of the CalEEMod™ user's guide.

VMT fractions, calculated as the ratio of VMT for each vehicle class to total VMT for all vehicles were also derived for each scenario year. These values are based on CARB's EMFAC post processor.

The emissions from mobile sources were calculated with the trip rates, trip lengths and emission factors for running from EMFAC2011 as follows<sup>53</sup>.

$$\text{Emissions}_{\text{pollutant}} = \text{VMT} * \text{EF}_{\text{running, pollutant}}$$

Where:

Emissions<sub>pollutant</sub> = emissions from vehicle running for each pollutant

VMT = vehicle miles traveled

EF<sub>running, pollutant</sub> = emission factor for running emissions

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<sup>53</sup> SCAQMD, 2011, California Emissions Estimator Model User's Guide, Appendix A, pages 13-14. Version 2011.1. February. Available at: <http://www.CalEEMod.com/>. Accessed: December, 2014.

Evaporative emissions, starting and idling emissions are multiplied by the number of trips times the respective emission factor for each pollutant.

The GHG emission from on-road vehicles associated with construction is shown in Table 7.

### 3.4.1.3 Total Construction Emissions

The total emissions from construction are summarized in Table 7. Total GHG emissions from all construction phases for off-road and on-road emissions are 3,111 and 16,808 MT CO<sub>2</sub>e, respectively. When amortized over 30-year project lifetime, the construction GHG emissions are 664 MT CO<sub>2</sub>e/year<sup>54</sup>. Detailed emission inventory from the CalEEMod™ output files are included in Appendix A.

### 3.4.2 Vegetation Changes

This section presents the calculation of the positive and negative GHG emissions associated with vegetation removal and re-vegetation at the Project site. Permanent vegetation changes that occur as a result of project development constitute a one-time change in the carbon sequestration capacity of a project. In this case, developed land will be converted to different land uses with additional landscaped areas with trees and vegetation. This will result in an overall net gain of carbon sequestration once the vegetation reaches a steady state (i.e., new vegetation replaces dying vegetation). Consequently, vegetation change results in decrease in overall GHG emissions.

CalEEMod™ was used to calculate GHG emissions associated with the vegetation activities of land use change and the planting of new trees, as according to the Intergovernmental Panel on Climate Change (IPCC) protocol for vegetation. Overall Change in Sequestered CO<sub>2</sub>e can be estimated with this equation<sup>55</sup>.

$$\text{Overall Change in Sequestered CO}_2 = \sum_i ((SeqCO_2)_i \times area_i) - \sum_j ((SeqCO_2)_j \times area_j)$$

Where:

*SeqCO<sub>2</sub>* = mass of sequestered CO<sub>2</sub> per unit area [MT CO<sub>2</sub>e/acre]

*area* = area of land for specific land use type [acre]

*i* = index for final land use type

*j* = index for initial land use type

Overall change in sequestered CO<sub>2</sub> is the summation of sequestered CO<sub>2</sub> from initial land use type multiplied by area of land for initial land use type subtracted by the summation of sequestered CO<sub>2</sub> from final land use type multiplied by area of land for final land use type. There is no reduction in GHG emissions associated with preservation of a land. The vegetation

<sup>54</sup> This approach to one-time construction and vegetation change GHG emissions is based on the GHG Threshold Working Group Meeting #13 Minutes from August 26, 2009. Available at: <http://www.agcmd.gov/ceqa/handbook/GHG/2009/aug26mtg/wkqp13minutes.pdf>. Accessed: November, 2014.

<sup>55</sup> SCAQMD, 2011, California Emissions Estimator Model User's Guide, Appendix A, pages 40-43. Version 2011.1. February. Available at: <http://www.CalEEMod.com/>. Accessed: November, 2014.

changes result in net gain of carbon sequestration. Since the exact species of trees to be planted is not known at this time, the miscellaneous tree type was selected which represents an average of several tree species. In addition, the existing vegetation being removed and added as part of the Project is accounted for. The Project is expected to include net new trees of 258 trees. The change in vegetation at the proposed Project site results in a one-time net sequestration of carbon as shown in Table 8. The Project CO<sub>2</sub>e sequestered emissions was estimated to be 185.47 MTCO<sub>2</sub>e. In other words, the Project is estimated to sequester a total of 185.47 MTCO<sub>2</sub>e or 6.18 MTCO<sub>2</sub>e per year if amortized over a 30-year project lifetime.

### 3.5 Annual Operational Emissions

Emissions from mobile and area sources and indirect emissions from energy and water use, wastewater, as well as waste management, would occur every year after build out. This section outlines the operational GHG emissions.

#### 3.5.1 Area Sources

Area sources in CalEEMod consist of direct sources of air and GHG emissions. Area sources with GHG emissions relevant to the Project include emissions from hearths and landscape maintenance equipment. The area source GHG emissions included in this analysis result from landscaping-related fuel combustion sources, such as lawn mowers. The Project will not include any natural gas fireplaces<sup>56</sup>. GHG emissions due to natural gas combustion in buildings other than from fireplaces are excluded from this section since they are included in the emissions associated with building energy use.

The GHG emissions for the Project were calculated using CalEEMod™ defaults based upon the land uses that will be part of these developments, except that all cooking stoves were assumed to be natural gas burning, based on SCAQMD Rule 445 and it is assumed that there will be no fireplaces in the residential dwelling units. The resulting GHG emissions for the Project are shown in Table 9.

#### 3.5.2 Energy Use

GHGs are emitted from buildings as a result of activities for which electricity and natural gas are typically used as energy sources. Combustion of any type of fuel emits CO<sub>2</sub> and other GHGs directly into the atmosphere; these emissions are considered direct emissions associated with a building. GHGs are also emitted during the generation of electricity from fossil fuels; these emissions are considered to be indirect emissions. Table 10 lists the emission factors for electricity used in this analysis and how it was calculated. Climate Zone 11 was selected based on the CEC forecast climate zone map shown in the CalEEMod™ User's Guide. Project emissions have been calculated using a LADWP emission factor that accounts for the 33% RPS required by 2020, as discussed in Section 3.3. The adjusted LADWP emission factor is based

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<sup>56</sup> Wood-burning fireplaces and stoves are largely prohibited in the South Coast Air District as of March 9, 2009. Rule 445.

on the Power/Utility Reporting Protocol, which reports the mix renewable and non-renewable sources in LADWP's energy supply. With this data, the LADWP emission factor is adjusted to represent what the emissions from LADWP would be in 2020. The Project's GHG emissions also reflect the Project's requirement to construct buildings that meet the 2013 Title 24 Part 6 Building Code<sup>57</sup>. As a conservative estimate, the analysis assumes that redeveloped portions of The REEF will only meet the 2005 Title 24 Building Code.

### 3.5.2.1 Emissions Estimation from Energy Use

Energy use in buildings is divided into energy consumed by the built environment and energy consumed by uses that are independent of the construction of the building such as in plug-in appliances. In California, Title 24 governs energy consumed by the built environment, mechanical systems, and some types of fixed lighting<sup>58</sup>. Non-building energy use, or "plug-in" energy use can be further subdivided by specific end-use (refrigeration, cooking, office equipment, etc.). To calculate the building energy input for the Project (e.g., electricity, and natural gas), Ramboll Environ utilized default values provided in CalEEMod<sup>TM</sup>, which are based on the California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS)<sup>59</sup>.

CalEEMod<sup>TM</sup> converts the resulting energy use quantities to GHG emissions by multiplying by the appropriate emission factors obtained by incorporating information on local electricity production. Unless otherwise noted, CalEEMod<sup>TM</sup> default parameters were used. The CalEEMod results stated do not include emissions from signage since CalEEMod does not specifically estimate such emissions. The energy related emissions also include project design features such as, energy efficient lighting and installation of Energy Star appliances for the Project. The residential and non-residential buildings are assumed to have high efficiency light bulbs and lighting fixtures, which is estimated to reduce the lighting energy use by 75%.<sup>60</sup> The Energy Star commitment includes appliances such as, clothes washers, dish washers, refrigerators, and fans and the improved energy efficiency is based on CalEEMod default assumptions. These appliances reduce GHG emissions associated with reduced electricity usage. Therefore, the CO<sub>2</sub>e emissions from electricity and natural gas usages were estimated to be 5,336 and 1,274 MTCO<sub>2</sub>e/yr, respectively, or 6,611 MTCO<sub>2</sub>e/yr total (Table 11).

Electricity use by the signage is based on project specific estimates, and associated emissions are calculated using CalEEMod<sup>TM</sup> emission factors. The CO<sub>2</sub>e emissions from signage is 3,634 MTCO<sub>2</sub>e/yr (see Table 11). Additionally, energy usage (i.e., electricity and natural gas) by swimming pools is calculated from the City of Oakland Energy Efficient Commercial Pool

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<sup>57</sup> The Title 24 2013 Building Energy Efficiency Standards are pending. Available at: [http://www.energy.ca.gov/title24/2013standards/rulemaking/documents/2013\\_Building\\_Energy\\_Efficiency\\_Standards\\_FAQ.pdf](http://www.energy.ca.gov/title24/2013standards/rulemaking/documents/2013_Building_Energy_Efficiency_Standards_FAQ.pdf). Accessed: December, 2014.

<sup>58</sup> Title 24, Part 6, of the California Code of Regulations: California's Energy Efficiency Standards for Residential and Nonresidential Buildings. <http://www.energy.ca.gov/title24/>.

<sup>59</sup> A detailed explanation how the RASS and CEUS data was processed for use in CalEEMod is available in CalEEMod User's Guide Appendix E pages 27-32.

<sup>60</sup> Available at: <http://energy.gov/energysaver/articles/led-lighting>. Accessed: December, 2014.



Program Preliminary Facility Reports. The estimated emissions from the swimming pools is 323 MTCO<sub>2</sub>e/yr (Table 12).

### 3.5.3 Water Supply, Treatment and Distribution

Indirect GHG emissions result from the production of electricity used to convey, treat and distribute water and wastewater. The amount of electricity required to convey, treat and distribute water depends on the volume of water as well as the sources of the water. Additional emissions from wastewater treatment include CH<sub>4</sub> and N<sub>2</sub>O, which are emitted directly from the wastewater. The Project water usage is estimated to be 130 thousand gallons per year (Mgal/yr) before any water efficiency measures are incorporated.

The analysis assumes a 20 percent reduction through the use of water saving fixtures and or flow restrictors as required by the California Green Building Standards Code. GHG emissions related to the water and wastewater conveyance were based on the utility emission factors consistent with the Project analysis

The Project was estimated to have 75 and 54 Mgal/yr of indoor and outdoor water usages and was estimated to result in 712 MTCO<sub>2</sub>e/yr as shown in Table 13.

### 3.5.4 Solid Waste

Municipal solid waste (MSW) is the amount of material that is disposed of by land filling, recycling, or composting. CalEEMod™ calculates the indirect GHG emissions associated with waste that is disposed of at a landfill. The program uses annual waste disposal rates from the California Department of Resources Recycling and Recovery (CalRecycle) data for individual land uses. The emission estimates in this Project were based on CalEEMod™ default factors. CalEEMod™ uses the overall California Waste Stream composition to generate the necessary types of different waste disposed into landfills. The program quantifies the GHG emissions associated with the decomposition of the waste, which generates methane based on the total amount of degradable organic carbon. The program quantifies the CO<sub>2</sub> emissions associated with the combustion of methane, if applicable. Default landfill gas concentrations were used as reported in Section 2.4 of AP-42. The IPCC has a similar method to calculate GHG emissions from MSW in its 2006 Guidelines for National Greenhouse Gas Inventories.

The analysis assumes that there is no waste diversion consistent with the CalEEMod default assumption. This is a conservative estimate as waste will likely be diverted from landfills by a variety of means, such as reducing the amount of waste generated, recycling, and/or composting to meet the statewide goal of 75% waste diversion<sup>61</sup>. The CalEEMod™ solid waste module determines the GHG emissions associated with the disposal of solid waste into landfills, in quantities that are based upon land use type according to waste disposal studies conducted

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<sup>61</sup> CalRecycle, 2013. California's 75 Percent Initiative. Available at: <http://www.calrecycle.ca.gov/75percent/>. Accessed: December, 2014.

by CalRecycle. For this module, CalEEMod™ default waste generation rates were used since site specific information was not available. GHG emissions associated with non-landfill diverted waste streams are not considered, because it is generally assumed that these diversions do not result in any appreciable amounts of GHG emissions when operated effectively<sup>62</sup>. These waste diversion alternatives may result in differences in life-cycle emissions of GHGs, but it is not appropriate to combine life-cycle emissions for only one category of emissions<sup>63</sup>. As mentioned previously, biogenic CO<sub>2</sub> emissions were not included when CARB analyzed the GHG emissions inventory under AB 32. Therefore, they are not included in the Project emissions inventory.

The Project was estimated to generate 1,148 tons/yr of solid waste and was estimated to result in 522 MTCO<sub>2</sub>e/yr as shown in Table 14.

### 3.5.5 Mobile Source Emissions

The GHG emissions associated with on-road mobile sources are generated from residents, workers, customers, and delivery vehicles visiting the land use types in the project. The emissions associated with on-road mobile sources includes running and starting exhaust emissions, evaporative emissions, brake and tire wear, and fugitive dust from paved and unpaved roads. Starting and evaporative emissions are associated with the number of starts or time between vehicle uses and the assumptions used in determining these values are described below. All of the other emissions are dependent on VMT. Ramboll Environ estimated traffic emissions using the trip rates specified in the Traffic Study<sup>64</sup> (Table 15).

The analysis includes the benefit of reductions from the regulatory programs such as Pavley, LCFS and Advance Clean Cars. AB 1493 (“the Pavley Standard”) requires CARB to adopt regulations by January 1, 2005, to reduce GHG emissions from non-commercial passenger vehicles and light-duty trucks of model year 2009 and thereafter. The CalEEMod™ model includes emission reductions for non-commercial passenger vehicles and light-duty trucks of model year 2017 – 2025. Executive Order S-01-07 (January 18, 2007) requires a 10 percent or greater reduction in the average fuel carbon intensity for transportation fuels in California regulated by CARB. The regulation went into effect on April 15, 2010, and requires a reduction in the carbon intensity of transportation fuels used in California by at least 10 percent by 2020. It imposes fuel requirements on fuel that will be sold in California, which will decrease GHG emissions, by reducing the full fuel-cycle, and the carbon intensity of the transportation fuel pool in California. Reductions due to Low Carbon Fuel Standards were further applied to CO<sub>2</sub> emission factors after adjustments from Pavley I for scenario years 2011 and after. This is also included in the CalEEMod™ model. The Advanced Clean Cars program introduced in 2012, combines the control of smog, soot causing pollutants and greenhouse gas emissions into a single coordinated package of requirements for model years 2015 through 2025. This

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<sup>62</sup> CARB. 2010. Local Government Operations Protocol. Chapter 9.4.

<sup>63</sup> This inventory represents scope 1 and 2 emission categories. A life-cycle analysis of waste diversion would be a scope 3 inventory. CARB’s Local Government Operations Protocol Version 1.1 (May 2010) clearly states that scope 3 emissions should not be combined with scope 1 and 2 emissions.

<sup>64</sup> CITATION TO BE UPDATED.

regulation has not been incorporated into CalEEMod™, and thus an estimate of the GHG emission reductions from the Advanced Clean Cars program were estimated separately.

### 3.5.5.1 Trip Type

In CalEEMod™, the trip type breakdown describes the purpose of the trip generated at each land use. For example, the trip type breakdown indicates the percentage of trips generated at single family home for work, for shopping, and for other purposes. Two sets of trip type breakdowns are used in CalEEMod™<sup>65</sup>.

- **Residential Trips** – These trips include home-work (H-W), home-shop (H-S), or home-other (H-O). A home-work trip represents the trip from the home to the workplace. A home-shop trip represents the trip from the home to a land use where shopping takes place (generally retail). A home-other represents all other types of trips generated from the resident such as school, entertainment, etc. The trip type breakdown in CalEEMod™ is from district-supplied information or the 1999 Caltrans Statewide Travel Survey is used as default or specific information obtained from the various Districts.
- **Commercial Trips** – These trips include commercial-customer (C-C), commercial-work (C-W) and commercial-nonwork (C-NW). A commercial-customer trip represents a trip made by someone who is visiting the commercial land use to partake in the services offered by the site. The commercial-work trip represents a trip made by someone who is employed by the commercial land use. The commercial-nonwork trip represents a trip associated with the commercial land use other than by customers or workers. An example of C-NW trips includes trips made by delivery vehicles of goods associated with the land use. The trip type breakdown from the number of workers and or truck trips from Institute of Transportation Engineers and an analysis of information provided for the South Coast Air Basin was used as default to assign the trip type breakdowns for all land uses in CalEEMod™.

### 3.5.5.2 Primary Trip Length

The Project specific trip length estimated by the Traffic Consultant was used to estimate the total VMT.<sup>66</sup> While CalEEMod™ provides default options for a 'rural' and 'urban' setting for the various geographic areas in California, and this analysis assumed 'urban' based on the location in downtown Los Angeles, the use of the Project specific trip lengths overrides the default assumptions associated with this selection. The Project specific trip length also renders the trip type as irrelevant since the Project specific trip length already accounts for these different trip types.

### 3.5.5.3 Trip Reductions

Based on the Project's Traffic Study, this analysis assumes that the Project will reduce trip generation due to the following project design features:

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<sup>65</sup> SCAQMD, 2013, California Emissions Estimator Model User's Guide, Appendix A, page 20. Version 2011.1. February. Available at: <http://www.CalEEMod.com/>. Accessed: November, 2014.

<sup>66</sup> Trip length information provided by the Mobility Group.

- Provide sidewalk bike racks (including near bus stops).
- Coordinate with LADOT to provide the physical space (approximately 1,000 square feet rent free in a strategic location visible to the public) for a Mobility Hub/Bikeshare Station at the Project Site that could include space for:
  - secure, long-term parking,
  - maintenance and repair, and/or potential small Bicycle Store, and
  - area for bike share.
- Make a one-time financial contribution of \$250,000 to the City of Los Angeles Department of Transportation, the monies to be used in the implementation of the Mobility Hub on the site of the Proposed Project.
- Make a one-time financial contribution of \$250,000 to the City's Bicycle Trust Fund, the monies to be used to improve bicycle facilities in the area of the Proposed Project.
- Participate in a Car-Share Program, and provide a minimum of 10 (ten) off-street car share parking spaces in the Proposed Project's parking garage.
- Facilitate rideshare through an on-site transportation coordinator.
- Facilitate carpools and vanpools for project employees, students, etc. by providing priority locations for carpool and vanpool parking
- Provide on-site facility with information on car-sharing, vanpools, taxis (e.g., kiosk, concierge, or transportation office).
- Provide emergency or late-night ride homes for transit users or carpoolers who reasonably and unexpectedly leave work early or late and cannot take bus/train/carpool.

The trip generation rates incorporate the trip reductions associated with these features.

#### **3.5.5.4 Pass-by and Diverted Trips**

Trip link types further describe the characteristics of the trip attracted to each land use, whether it is a primary trip, a diverted link trip, or a pass-by trip. For example, a commercial customer pass-by trip could be a person going from home to shop on his/her way to work. In addition, a commercial customer diverted-link trip could be a person going from home to work, and on its way making a diversion to shop. Pass-by trips generate virtually no additional running emissions but could generate additional resting and startup emissions. Diverted trips generate less running emissions compared to primary trips, and can also generate additional resting and startup emissions.

The Project Traffic Study incorporated a reduction related to pass-by trips and it was conservatively assumed that there were no additional diverted trips. The trip rates, based on the Traffic Study analysis, are shown in Table 15.

#### **3.5.5.5 Estimated Emissions from Mobile Sources**

The Project was estimated to generate approximately 32,221,253 VMT/yr and was estimated to result in 12,786 MTCO<sub>2</sub>e/yr as shown in Table 16.

## 4 Inventory in Context

This section examines the overall Project emissions in the context of AB 32 emission reduction goals.

### 4.1 Comparison with Significance Threshold

Based on Appendix G of the CEQA Guidelines, a project's GHG emissions would normally have a significant effect on the environment if the project would (1) generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment or (2) conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs. Although no numeric threshold for determining the significance of construction or operational GHG emissions from a residential/commercial development project has been adopted by the lead agency or by the SCAQMD, the Project's emissions is compared to SCAQMD's proposed draft efficiency target.<sup>67</sup>

Consistent with AB 32, this report compares the Project's emissions to the SCAQMD draft efficiency target for 2020. The District's draft 2020 target for project-level analysis is 4.8 MT/year CO<sub>2</sub>e per service population. The Project's efficiency metric is estimated to be 4.76 MT/year CO<sub>2</sub>e per service population. This estimate represents the new land uses that are developed as part of this Project. Therefore, the Project will not result in significant impacts under this methodology, as it would generate GHG emissions that are below the SCAQMD draft efficiency target (see Table 17).

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<sup>67</sup> SCAQMD 2010. CEQA Significance Thresholds Working Group Meeting #15. September 28. Available at: <http://www.aqmd.gov/ceqa/handbook/GHG/2010/sept28mtg/sept29.html>. Accessed: November, 2014.

## Tables

**Table 1. Proposed Project Land Uses and Square Footages**

The Reef Project  
 Los Angeles, California

Proposed Project <sup>1</sup>	CalEEMod Analysis			
	Land Use Category	Land Use Subtype <sup>2</sup>	Land Use Unit Amount	Size Metric
<b>New Development<sup>3</sup></b>				
Condominium	895 DU	Residential	Condo/Townhouse	895 DU
Apartments (Rental)	549 DU	Residential	Apartments Mid Rise	549 DU
Hotel	208 rooms	Recreational	Hotel	208 rooms
Retail/Commercial <sup>4</sup>	105.06 TSF	Retail	Regional Shopping Center	105.06 TSF
Gallery/Museum	17.51 TSF	Educational	Library	17.51 TSF
Gym	7.88 TSF	Recreational	Health Club	7.88 TSF
Parking	2,733 spaces	Parking	Enclosed Parking with Elevator	2,733 spaces
<b>Re-Developed Buildings<sup>5</sup></b>				
Office	180 TSF	Commercial	General Office Building	180 TSF
Retail/Commercial <sup>6</sup>	30 TSF	Retail	Regional Shopping Center	30 TSF

Notes:

- <sup>1</sup> Project conditions defined based on project description and traffic study land use type. Land uses are matched for unit size from the project description (traffic study only shows the "new" land uses and not the existing land uses).
- <sup>2</sup> Land uses as defined in CalEEMod. When an exact mapping of a land use was not available in CalEEMod relative to the "Project Entitlement," a land use with similar emission characteristics was chosen. For example, retail/commercial was represented as a 'regional shopping center,' and gallery / museum was represented as 'library.'
- <sup>3</sup> *New Development* includes land uses to be constructed on the "East Block" of the Project site.
- <sup>4</sup> Based on project description, land use retail/commercial for 'new development' includes - 40,045 sqft of Retail, 29,355 sqft of Grocery Store, 27,657 sqft of Restaurant, and 8,000 sqft of Roof-top Restaurant on The REEF.
- <sup>5</sup> *Re-developed* land use includes partial demolition and re-construction on the "West Block" of the Project site. The West Block currently holds The REEF building. Only updated land uses are included as a part of GHG analysis (i.e., existing Wholesale/Showroom/Mercantile/Event and office space are not included).
- <sup>6</sup> Based on project description, land use retail/commercial for 're-developed buildings' include - 10,000 sqft of Restaurant, and 20,000 sqft of Retail, both within The REEF.

Abbreviations:

- sqft - square feet
- CalEEMod - CALifornia Emissions Estimator MODEl
- DU - dwelling units
- TSF - thousand square feet
- GHG - greenhouse gas

**Table 2. Existing Land Uses and Square Footages**

The Reef Project  
 Los Angeles, California

Existing Conditions <sup>1</sup>		CalEEMod Analysis			
		Land Use Category	Land Use Subtype <sup>2</sup>	Land Use Unit Amount	Size Metric
Showroom	648.8 TSF	Retail	Regional Shopping Center	648.77	TSF
Office	212.4 TSF	Commercial	General Office Building	212.39	TSF
Warehouse/Distribution	11.15 TSF	Industrial	Unrefrigerated Warehouse - No Rail	11.15	TSF
Parking	1,100 spaces	Parking	Parking Lot	1,100	spaces

Notes:

<sup>1</sup> Existing conditions defined based on project description and traffic study land use type. Land use "showroom" consists of "wholesale/showroom/mercantile/event" from the project description table.

<sup>2</sup> Land uses as defined in CalEEMod. When an exact mapping of a land use was not available in CalEEMod relative to the "Project Entitlement," a land use with similar emission characteristics was chosen. For example, showroom was represented as a 'regional shopping center,' and warehouse/distribution was represented as 'unrefrigerated warehouse - no rail.'

Abbreviations:

sqft - square feet

CalEEMod - CALifornia Emissions Estimator MODel

TSF - thousand square feet



### Table 3. Existing Conditions Emissions Inventory

The Reef Project  
Los Angeles, California

Category <sup>1</sup>	CO <sub>2</sub> e Emissions <sup>2</sup> (MT/yr)
Area	0.06
Energy Use	8,075
Water Use	195
Waste Disposed	405
Traffic	5,835
<b>Total</b>	<b>14,509</b>

Notes:

<sup>1</sup> CO<sub>2</sub>e emissions were estimated using CalEEMod version 2013.2.2 for all operational categories. This estimate is based on existing land uses, existing water use estimates, and trip rates and trip lengths based as estimated by Mobility Group. The energy use assumes buildings meeting 2005 Title 24 standards.

<sup>2</sup> CO<sub>2</sub>e includes CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions, which are weighted by their respective global warming potentials.

Abbreviations:

CH<sub>4</sub> - methane

CO<sub>2</sub> - carbon dioxide

CO<sub>2</sub>e - carbon dioxide equivalents

GHG - greenhouse gases

MT - metric tons

N<sub>2</sub>O - nitrous oxide

yr - year

CalEEMod - CALifornia Emissions Estimator MODEL

## Table 4. Construction Land Uses Acreage

The Reef Project  
Los Angeles, California

Land Use Type	Land Use Sub type	Land Use	Metric	Lot (acres) <sup>1</sup>
<b>New Development</b>				
Residential	Condo/Townhouse	895	DU	4.35
Residential	Apartments Mid Rise	549	DU	1.12
Recreational	Hotel	208.00	rooms	0.54
Retail	Regional Shopping Center	105.06	TSF	0.19
Educational	Library	17.51	TSF	0.03
Recreational	Health Club	7.9	TSF	0.01
Parking	Enclosed Parking with Elevator	2,733.0	spaces	1.91
<b>Re-developed Buildings</b>				
Commercial	General Office Building	180	TSF	0.32
Retail	Regional Shopping Center	30	TSF	0.05

Notes:

<sup>1</sup> Lot acreage based on site size of 9.7 acres.

Abbreviations:

DU - dwelling unit

sqft - square feet

TSF - thousand square feet

**Table 5. Construction Schedule and Equipment Mix Assumptions**

The Reef Project  
Los Angeles, California

Construction Phase Name <sup>1,2</sup>	Phase Type	Phase Start Date	Phase End Date	OffRoad Equipment Type <sup>3</sup>	Equipment Unit Amount
Demolition	Demolition	2016/04/01	2016/04/30	Concrete/Industrial Saws	1
				Excavators	3
				Rubber Tired Dozers	2
Building Construction (WB)	Building Construction	2016/05/01	2018/07/31	Cranes	2
				Forklifts	6
				Generator Sets	2
				Tractors/Loaders/Backhoes	6
				Welders	2
Architectural Coating (WB)	Architectural Coating	2017/06/01	2018/07/31	Air Compressors	1
Site Preparation <sup>3</sup>	Site Preparation	2018/08/01	2018/08/31	Rubber Tired Dozers	1
				Tractors/Loaders/Backhoes	4
Grading <sup>3</sup>	Grading	2018/09/01	2018/10/31	Excavators	2
				Rubber Tired Dozers	1
				Tractors/Loaders/Backhoes	3
Building Construction (EB)	Building Construction	2018/11/01	2021/04/01	Cranes	2
				Forklifts	6
				Generator Sets	2
				Tractors/Loaders/Backhoes	6
				Welders	2
Paving <sup>4</sup>	Paving	2021/03/01	2021/04/01	Pavers	2
				Paving Equipment	2
				Rollers	2
Architectural Coating (EB)	Architectural Coating	2020/01/01	2021/04/01	Air Compressors	1

**Notes:**

- <sup>1</sup> Project specific construction schedule.
- <sup>2</sup> Construction assumptions based on CalEEMod v. 2013.2.2 defaults and Project specific estimates.
- <sup>3</sup> All off-road (construction) equipment to be US EPA - Tier 3 emission standards.
- <sup>4</sup> Site preparation and grading includes excavation activity and below grade parking foundation.
- <sup>5</sup> Paving includes leveling of land / pavements around the constructed buildings.
- <sup>6</sup> Construction activity assumed to occur 5 days/week.
- <sup>7</sup> Analysis assumes that watering occurs three times/day for fugitive dust control.

**Abbreviations:**

CalEEMod - CALifornia Emissions Estimator MODel  
 EB - East Block  
 WB - West Block (includes The REEF)

**Table 6. Grading Volumes**

The Reef Project  
Los Angeles, California

<b>Project Construction Phase<sup>1</sup></b>	<b>Material Imported</b>	<b>Material Exported</b>	<b>Total Altered Area</b>
	<b>Cubic Yards</b>		<b>Acres</b>
Grading	0	60,000	10

Notes:

<sup>1</sup> Based on Project description.

Abbreviation:

cy - cubic yards

## Table 7. Construction Emissions Summary<sup>1</sup>

The Reef Project  
Los Angeles, California

Calendar Year	Total Off-Road Emissions	Total On-Road Emissions			Total Construction Emissions
		Worker	Vendor	Hauling	
	(MT CO <sub>2</sub> e)				
2016	465	1,629	765	0	2,859
2017	645	2,598	1,118	0	4,362
2018	563	1,947	825	248	3,583
2019	614	2,162	1,081	0	3,857
2020	641	2,499	1,061	0	4,201
2021	183	612	263	0	1,058
<b>Total</b>	<b>3,111</b>	<b>11,447</b>	<b>5,113</b>	<b>248</b>	<b>19,919</b>
<b>30-yr amortized</b>					<b>664</b>

### Notes:

<sup>1</sup> Construction emissions include On-site and Off-site (worker/vendor/hauling) emissions, estimated using CalEEMod v.2013.2.2 or methodologies described in the text. CO<sub>2</sub>e includes CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions, weighted by their respective global warming potentials.

### Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODEL

CH<sub>4</sub> - methane

CO<sub>2</sub> - carbon dioxide

CO<sub>2</sub>e - carbon dioxide equivalents

GHG - greenhouse gases

MT - metric tons

N<sub>2</sub>O - nitrogen dioxide

yr - year

## Table 8. Vegetation Change Evaluation

The Reef Project

Los Angeles, CA

Type of Vegetation Change	Land Use Change <sup>1</sup>		Annual CO <sub>2</sub> Accumulation <sup>2</sup> (MT)
	Initial (acres)	Final (acres)	
Grassland <sup>3</sup>	0	0.65	2.80
<b>Total vegetation change</b>	<b>0</b>	<b>0.65</b>	<b>2.80</b>
<b>Net New Trees - CO<sub>2</sub>e Sequestered<sup>4</sup></b>			
<b>Type of Trees</b>	<b>(No. of Trees)</b>	<b>(No. of Trees)</b>	<b>Net New Trees</b>
Miscellaneous	59	317	258
CO <sub>2</sub> e sequestered from Net New Trees (MT)			182.66
<b>Total CO<sub>2</sub>e accumulated/Sequestered<sup>5</sup></b>			<b>185.47</b>
<b>30-yr amortized</b>			<b>6.18</b>

### Notes:

<sup>1</sup> Based on vegetation change data for the Project.

<sup>2</sup> Emissions were estimated using CalEEMod version 2013.2.2.

<sup>3</sup> Based on the Project, the final acreage of *grassland* consists of landscape within the Project area.

<sup>4</sup> Total CO<sub>2</sub>e sequestered over IPCC recommended 20 year active growth period of new trees.

<sup>5</sup> The positive value indicates sequestration of CO<sub>2</sub>e. These are CO<sub>2</sub>e emissions that are reduced from the atmosphere.

### Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel

CO<sub>2</sub> - carbon dioxide

CO<sub>2</sub>e - carbon dioxide equivalents

IPCC - Intergovernmental Panel on Climate Change

MT - metric tons

yr - year

### Table 9. GHG Emissions from Area Sources

The Reef Project  
Los Angeles, California

Category <sup>1</sup>	CO <sub>2</sub> e Emissions <sup>2</sup>
	(MT/yr)
Landscaping	24.90
<b>Total</b>	<b>24.90</b>

Notes:

<sup>1</sup> Categories that CalEEMod classifies as "Area Sources." CalEEMod does not associate any CO<sub>2</sub>e emissions with Architectural Coating and Consumer Products. No emissions are associated with "Hearth", since the Proposed Project does not anticipate having hearths/fireplaces in the residential land uses.

<sup>2</sup> Emissions were estimated using CalEEMod version 2013.2.2.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel

CO<sub>2</sub>e - carbon dioxide equivalents

GHG - greenhouse gases

MT - metric tons

yr - year

**Table 10. Utility GHG Emission Factor Associated with Renewable Power Standard**

The Reef Project  
Los Angeles, California

	Energy Delivered <sup>1</sup> [MWh]			Units
	2006	2007	Average	
Total Energy Delivery <sup>1</sup>	29,029,883	29,141,703		MWh
from renewables <sup>2</sup>	1,775,411	1,565,489		MWh
from non-renewables	27,254,472	27,576,214		MWh
% of Total Energy From Renewables <sup>2</sup>	6%	5%		
Total CO <sub>2</sub> Emissions <sup>1</sup>	16,308,526	16,230,815		metric tonnes CO <sub>2</sub>
% of Total Energy From Non-Renewables	94%	95%		
CO <sub>2</sub> Emissions per Total Energy Delivered	1,238.52	1,227.89	1,233.20	lbs CO <sub>2</sub> /MWh delivered
CO <sub>2</sub> Emissions per Total Non-Renewable Energy <sup>3</sup>	1,319.20	1,297.60		lbs CO <sub>2</sub> /MWh delivered
<b>Estimated Emission Factors for Total Energy Delivered<sup>4</sup></b>				
2020 RPS (33%)	<b>883.9</b>	<b>869.4</b>	<b>876.6</b>	lbs CO <sub>2</sub> /MWh delivered

Notes:

- <sup>1</sup> Total energy delivery and total CO<sub>2</sub> emissions are provided in LADWP Power/Utility Protocol (PUP) Reports available at: <http://www.climateregistry.org/tools/carrot/carrot-public-reports.html>.
- <sup>2</sup> Renewable energy delivered is the sum of biogenic, geothermal and other renewable generations in PUP reports.
- <sup>3</sup> The emissions metric presented here is calculated based on the total CO<sub>2</sub> emissions divided by the energy delivered from non-renewable sources.
- <sup>4</sup> The emission factors for total energy delivered are estimated by multiplying the percentage of energy delivered from non-renewable energy by the CO<sub>2</sub> emissions per total non-renewable energy metric calculated above. Emission factor presented here is for the 33% RPS for 2020. The 33% reduction is used for Project emissions in this report. The estimate provided here and the PUP reports issued by LADWP assume that renewable energy sources do not result in any CO<sub>2</sub> emissions.

Abbreviations:

- CO<sub>2</sub> - carbon dioxide
- GHG - Greenhouse gas
- kWh - kilowatt-hour
- LADWP - Los Angeles Department of Water and Power
- lbs - pounds
- MWh - Megawatt-hour
- PUP - Power/Utility Protocol
- RPS - Renewables Portfolio Standard

Conversions:

lb/metric tonne = 2204.62



**Table 11. GHG Emissions Associated with Electricity and Natural Gas**

The Reef Project  
Los Angeles, California

CalEEMod Land Use	Project Entitlement	Electricity Use <sup>1</sup> (kWh/yr)	Natural Gas Use <sup>1</sup> (kBTU/yr)	CO <sub>2</sub> e Emissions from Energy Use <sup>2</sup>		
				Associated with Electricity Use	Associated with Natural Gas Burning	Total
				(MT/yr)		
<b>New Development</b>						
Condo/Townhouse	Condominium	3,045,870	12,240,700	1,215	657	1,872
Apartments Mid Rise	Apartments (Rental)	1,519,510	3,036,160	606	163	769
Hotel	Hotel	1,680,570	5,657,360	670	304	974
Regional Shopping Center	Retail/Commercial	862,858	140,465	344	8	352
Library	Gallery/Museum	149,929	253,930	60	14	73
Health Club	Gym	67,473	114,276	27	6	33
Enclosed Parking with Elevator <sup>3</sup>	Parking	3,651,156	0	1,456	0	1,456
<b>Sub-Total</b>		<b>10,977,366</b>	<b>21,442,891</b>	<b>4,377</b>	<b>1,151</b>	<b>5,528</b>
<b>Re-Developed Buildings</b>						
General Office Building	Office	2,102,490	2,239,200	838	120	959
Regional Shopping Center	Retail/Commercial	302,490	54,600	121	3	124
<b>Sub-Total</b>		<b>2,404,980</b>	<b>2,293,800</b>	<b>959</b>	<b>123</b>	<b>1,082</b>
<b>Total</b>		<b>13,382,346</b>	<b>23,736,691</b>	<b>5,336</b>	<b>1,274</b>	<b>6,611</b>
Signage <sup>3</sup>		9,114,050	--	3,634	--	3,634

**Notes:**

<sup>1</sup> Energy usage for each land use was based on CalEEMod databases, which were obtained from CEUS or RASS studies on energy use and adjusted to account for Title 24 - 2013 building standards for the 'new development,' and Title 24 - 2005 building standards for the 're-developed buildings.' See Appendix A of the CalEEMod user's guide for details.

<sup>2</sup> Emissions were estimated using CalEEMod version 2013.2.2. See report for project design features and assumptions. Energy emissions included regulatory measure for 33% RPS for the utility provider. Emissions also include project design features, such as: Energy Efficient lighting, and Energy Star appliances.

<sup>3</sup> Emissions for 'enclosed parking with elevator' and 'signage' calculated based on Project specific estimates for electricity consumption.

**Abbreviations:**

CalEEMod - CALifornia Emissions Estimator MODel	MT - metric tons
CEUS - California Commercial End-Use Survey	RASS - California Statewide Residential Appliance Saturation Study
CO <sub>2</sub> e - carbon dioxide equivalents	SCAQMD - South Coast Air Quality Management District
GHG - greenhouse gases	yr - year
kBTU - 1,000 British thermal units	
kWh - kilowatt hours	

**Table 12. GHG Emissions Associated with Swimming Pool**

The Reef Project  
Los Angeles, California

Energy Source	Energy Use Factor <sup>1</sup>		Pool Volume <sup>2</sup>		Annual Energy Use <sup>3</sup>		Emission Factors		Total Emissions (MT CO <sub>2</sub> e/yr)
			(cubic feet)	(gal)			(lb CO <sub>2</sub> e/unit)	(unit)	
Electricity	0.496	(kWh/gal/yr)	30,480	228,006	113,091	(kWh/yr)	0.879	(kWh)	45
Natural Gas	0.023	(MMBTU/gal/yr)			5,244	(MMBTU/yr)	117	(MMBTU)	278
<b>Total</b>									<b>323</b>

Notes:

<sup>1</sup> Energy use factor based on an Oakland study to calculate emissions from swimming pools, provided in the City of Oakland Energy Efficient Commercial Pool Program Preliminary Facility Reports.

<sup>2</sup> Project specific information provided by client. Proposed Project has three swimming pools of 1,210 sqft, 1,160 sqft, and 1,440 sqft. The depth of the swimming pool is assumed to be 8 ft.

<sup>3</sup> Swimming pool assumed to use electricity for filters and pumps and natural gas for water heating.

Conversions:

- kWh - kilowatt hours
- MMBTU - million British thermal units
- gal - gallon
- yr - year
- lb - pound
- CO<sub>2</sub>e - carbon dioxide equivalents
- MT - metric tons
- ft - feet
- sqft - square feet

Reference:

City of Oakland / Oakland Unified School District. October 2006. Energy Efficient Commercial Pool Program; Preliminary Facility Reports for DeFremery Pool, Fremont Pool, Live Oak Pool, Lyons Pool, and Temescal Pool.

**Table 13. GHG Emissions Associated with Water Usage**

The Reef Project  
 Los Angeles, California

CalEEMod Land Use	Project Entitlement	Indoor Water Use	Outdoor Water Use	CO <sub>2</sub> e Emissions <sup>2</sup>
		(Mgal/yr)	(Mgal/yr)	(MT/yr)
<b>New Development</b>				
Condo/Townhouse	Condominium	36.55	28.80	356.07
Apartments Mid Rise	Apartments (Rental)	22.42	17.67	218.42
Hotel	Hotel	7.87	1.09	54.06
Regional Shopping Center	Retail/Commercial	2.82	2.16	27.17
Library	Gallery/Museum	0.00	0.00	0.00
Health Club	Gym	0.34	0.26	3.30
Enclosed Parking with Elevator	Parking	0.00	0.00	0.00
<b>Sub-Total</b>		<b>69.99</b>	<b>49.98</b>	<b>659.01</b>
<b>Re-Developed Buildings</b>				
General Office Building	Office	4.69	3.60	45.26
Regional Shopping Center	Retail/Commercial	0.80	0.62	7.76
<b>Sub-Total</b>		<b>5.50</b>	<b>4.21</b>	<b>53.02</b>
<b>Total</b>		<b>75</b>	<b>54</b>	<b>712</b>

Notes:

<sup>1</sup> Water usage for Proposed Project was provided in a water study. See report for project design features and assumptions. Emissions from water usage included project design features, such as: installing water saving fixtures and/or flow restrictors to reduce indoor water usage by 20%.

<sup>2</sup> Emissions were estimated using CalEEMod version 2013.2.2.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel

CO<sub>2</sub>e - carbon dioxide equivalents

GHG - greenhouse gases

Mgal - million gallons

MT - metric tons

yr - year

**Table 14. GHG Emissions Associated with Waste Disposal**

The Reef Project  
 Los Angeles, California

CalEEMod Land Use	Project Entitlement	Waste Disposed (tons/yr)	CO <sub>2</sub> e Emissions Associated with Waste (MT/yr)
<b>New Development</b>			
Condo/Townhouse	Condominium	412	187
Apartments Mid Rise	Apartments (Rental)	253	115
Hotel	Hotel	114	52
Regional Shopping Center	Retail/Commercial	110	50
Library	Gallery/Museum	16	7
Health Club	Gym	45	20
Enclosed Parking with Elevator	Parking	0	0
<b>Sub-Total</b>		<b>949</b>	<b>432</b>
<b>Re-Developed Buildings</b>			
General Office Building	Office	167	76
Regional Shopping Center	Retail/Commercial	32	14
<b>Sub-Total</b>		<b>199</b>	<b>90</b>
<b>Total</b>		<b>1,148</b>	<b>522</b>

Notes:

<sup>1</sup> Solid waste disposal emissions were estimated using CalEEMod version 2013.2.2.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODeI

CO<sub>2</sub>e - carbon dioxide equivalents

GHG - greenhouse gases

MT - metric tons

yr - year

**Table 15. CalEEMod™ Model Inputs Associated with Traffic**

The Reef Project  
Los Angeles, California

CalEEMod Land Use	Project Entitlement	Unit	Trip Rates <sup>1</sup> (trips/day/unit)		
			Weekday	Saturday	Sunday
<b>New Development</b>					
Condo/Townhouse	Condominium	DU	4.45	4.83	4.10
Apartments Mid Rise	Apartments (Rental)	DU	5.09	5.52	4.68
Hotel	Hotel	rooms	5.89	5.90	4.29
Regional Shopping Center	Retail/Commercial	TSF	19.37	22.54	11.38
Library	Gallery/Museum	TSF	1.38	1.14	0.62
Health Club	Gym	TSF	13.05	8.27	10.59
Enclosed Parking with Elevator	Parking	spaces	0.00	0.00	0.00
<b>Re-Developed Buildings</b>					
General Office Building	Office	TSF	8.44	1.82	0.75
Regional Shopping Center	Retail/Commercial	TSF	19.37	22.54	11.38

Notes:

<sup>1</sup> Trip rates were based on the Traffic Study and includes the 10% TDM reduction. Weekend trip were rates proportionally adjusted based on the default weekday/weekend ratio from CalEEMod.

<sup>2</sup> Trip lengths were based on an analysis by the Mobility Group. All trips associated with residential and non-residential land uses are assumed to have an average trip length of 7.85 miles and 7.10 miles, respectively. Based on this data, all trips are assumed to be "Primary Trips" within the CalEEMod analysis.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODeI

DU - dwelling unit

TSF - thousand square feet

**Table 16. GHG Emissions Associated with Traffic**

The Reef Project  
Los Angeles, California

CalEEMod Land Use	Project Entitlement	Vehicles Miles Travelled (VMT/yr)	CO <sub>2</sub> e Emissions Associated with Traffic <sup>1</sup> (MT/yr)
<b>New Development</b>			
Condo/Townhouse	Condominium	11,391,270	4,519
Apartments Mid Rise	Apartments (Rental)	7,989,229	3,169
Hotel	Hotel	3,044,098	1,208
Regional Shopping Center	Retail/Commercial	5,072,327	2,012
Library	Gallery/Museum	55,984	22
Health Club	Gym	244,701	97
Enclosed Parking with Elevator	Parking	0.00	0
<b>Sub-Total</b>		<b>27,797,609</b>	<b>11,027</b>
<b>Re-Developed Buildings</b>			
General Office Building	Office	2,975,235	1,183
Regional Shopping Center	Retail/Commercial	1,448,409	576
<b>Sub-Total</b>		<b>4,423,644</b>	<b>1,759</b>
<b>Total</b>		<b>32,221,253</b>	<b>12,786</b>

Notes:

<sup>1</sup> Emissions were estimated using CalEEMod version 2013.2.2. Emissions associated with transportation included emissions during running, idling, and startup of vehicles. See report for analysis assumptions.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel

GHG - greenhouse gases

MT - metric tons

VMT - vehicle miles traveled

yr - year

## Table 17. Summary of GHG Emissions

The Reef Project

Los Angeles, California

Category <sup>1</sup>	CO <sub>2</sub> e Emissions <sup>2</sup>
	(MT/yr)
Area	25
Energy Use	6,611
Water Use	712
Waste Disposed	522
Traffic	12,786
Swimming Pool	323
Signage	3,634
<b>Sub-Total</b>	<b>24,614</b>
Construction Amortized	664
Vegetation Amortized	-6
<b>Total</b>	<b>25,271</b>
Service Population <sup>3</sup>	5,314
Emissions per Service Population	4.76
AQMD Efficiency Metric Threshold <sup>4</sup>	4.8
Above Threshold?	No

### Notes:

<sup>1</sup> CO<sub>2</sub>e emissions were estimated using CalEEMod version 2013.2.2.

<sup>2</sup> CO<sub>2</sub>e includes CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions, which are weighted by their respective global warming potentials.

<sup>3</sup> Non-residential service population obtained from Project specific "POPULATION/HOUSING/EMPLOYMENT" report. Residential population generated by CalEEMod.

### Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel MT - metric tons  
 CH<sub>4</sub> - methane N<sub>2</sub>O - nitrous oxide  
 CO<sub>2</sub> - carbon dioxide yr - year  
 CO<sub>2</sub>e - carbon dioxide equivalents GHG - greenhouse gases

### Reference:

<sup>4</sup> SCAQMD 2010. CEQA Significance Thresholds Working Group Meeting #15. September 28. Available at: [http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-\(ghg\)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-main-presentation.pdf?sfvrsn=2](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-main-presentation.pdf?sfvrsn=2). Accessed: November, 2014.

# **Appendix A**

## **CalEEMod™ Output Files**



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**Appendix A.1**  
**Operational GHG Emissions Estimates for**  
**The Reef Project Existing Conditions (2014)**

## SOLA Village - Existing Conditions - Operational AQ / GHG (CY 2014)

### Los Angeles-South Coast County, Annual

#### 1.0 Project Characteristics

##### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	212.39	1000sqft	4.88	212,390.00	0
Unrefrigerated Warehouse-No Rail	11.15	1000sqft	0.26	11,150.00	0
Parking Lot	1,300.00	Space	11.70	520,000.00	0
Regional Shopping Center	648.77	1000sqft	14.89	648,770.00	0

##### 1.2 Other Project Characteristics

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	33
<b>Climate Zone</b>	11			<b>Operational Year</b>	2014
<b>Utility Company</b>	Los Angeles Department of Water & Power				
<b>CO2 Intensity (lb/MWhr)</b>	1227.89	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

##### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land use based on Existing Conditions.

Construction Phase - Existing Conditions - construction emissions not evaluated.

Off-road Equipment -

Vehicle Trips - Trip rates based on traffic study. All trips are 100% primary trips.

Energy Use - Using Title 24 - 2005 for existing conditions.

Water And Wastewater - Water consumption based on water study.

Table Name	Column Name	Default Value	New Value
tblVehicleTrips	CC_TL	8.40	7.10
tblVehicleTrips	CC_TL	8.40	7.10
tblVehicleTrips	CC_TL	8.40	7.10
tblVehicleTrips	CC_TL	8.40	7.10
tblVehicleTrips	CNW_TL	6.90	7.10
tblVehicleTrips	CNW_TL	6.90	7.10
tblVehicleTrips	CNW_TL	6.90	7.10
tblVehicleTrips	CNW_TL	6.90	7.10
tblVehicleTrips	CW_TL	16.60	7.10
tblVehicleTrips	CW_TL	16.60	7.10
tblVehicleTrips	CW_TL	16.60	7.10
tblVehicleTrips	CW_TL	16.60	7.10
tblVehicleTrips	DV_TP	19.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	77.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	PR_TP	54.00	100.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	2.37	2.02
tblVehicleTrips	ST_TR	49.97	5.89
tblVehicleTrips	ST_TR	2.59	3.56
tblVehicleTrips	SU_TR	0.98	0.83
tblVehicleTrips	SU_TR	25.24	2.97



**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	6.0629	2.8000e-004	0.0290	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	0.0539	0.0539	1.6000e-004	0.0000	0.0573
Energy	0.0207	0.1880	0.1579	1.1300e-003		0.0143	0.0143		0.0143	0.0143	0.0000	8,057.6404	8,057.6404	0.1894	0.0421	8,074.6763
Mobile	3.6356	9.8343	39.2292	0.0692	4.6147	0.1458	4.7605	1.2356	0.1338	1.3694	0.0000	5,829.4406	5,829.4406	0.2853	0.0000	5,835.4314
Waste						0.0000	0.0000		0.0000	0.0000	180.5016	0.0000	180.5016	10.6673	0.0000	404.5157
Water						0.0000	0.0000		0.0000	0.0000	5.0293	174.6244	179.6537	0.5207	0.0131	194.6337
<b>Total</b>	<b>9.7191</b>	<b>10.0225</b>	<b>39.4161</b>	<b>0.0703</b>	<b>4.6147</b>	<b>0.1602</b>	<b>4.7749</b>	<b>1.2356</b>	<b>0.1482</b>	<b>1.3838</b>	<b>185.5309</b>	<b>14,061.7593</b>	<b>14,247.2902</b>	<b>11.6629</b>	<b>0.0552</b>	<b>14,509.3144</b>

## 2.2 Overall Operational

### Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	6.0629	2.8000e-004	0.0290	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	0.0539	0.0539	1.6000e-004	0.0000	0.0573
Energy	0.0207	0.1880	0.1579	1.1300e-003		0.0143	0.0143		0.0143	0.0143	0.0000	8,057.6404	8,057.6404	0.1894	0.0421	8,074.6763
Mobile	3.6356	9.8343	39.2292	0.0692	4.6147	0.1458	4.7605	1.2356	0.1338	1.3694	0.0000	5,829.4406	5,829.4406	0.2853	0.0000	5,835.4314
Waste						0.0000	0.0000		0.0000	0.0000	180.5016	0.0000	180.5016	10.6673	0.0000	404.5157
Water						0.0000	0.0000		0.0000	0.0000	5.0293	174.6244	179.6537	0.5206	0.0130	194.6256
<b>Total</b>	<b>9.7191</b>	<b>10.0225</b>	<b>39.4161</b>	<b>0.0703</b>	<b>4.6147</b>	<b>0.1602</b>	<b>4.7749</b>	<b>1.2356</b>	<b>0.1482</b>	<b>1.3838</b>	<b>185.5309</b>	<b>14,061.7593</b>	<b>14,247.2902</b>	<b>11.6628</b>	<b>0.0552</b>	<b>14,509.3063</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	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	0.04	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	No phase	Trenching	1/1/2015	12/31/2014	5	0	

Acres of Grading (Site Preparation Phase): 0

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)**

**OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
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**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
No phase				0.00	14.70	6.90				

**3.1 Mitigation Measures Construction**

**4.0 Operational Detail - Mobile**

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**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	3.6356	9.8343	39.2292	0.0692	4.6147	0.1458	4.7605	1.2356	0.1338	1.3694	0.0000	5,829.4406	5,829.4406	0.2853	0.0000	5,835.4314
Unmitigated	3.6356	9.8343	39.2292	0.0692	4.6147	0.1458	4.7605	1.2356	0.1338	1.3694	0.0000	5,829.4406	5,829.4406	0.2853	0.0000	5,835.4314

### 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	1,992.22	429.03	176.28	3,901,116	3,901,116
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	3,282.78	3,821.26	1926.85	8,182,204	8,182,204
Unrefrigerated Warehouse-No Rail	39.69	39.69	39.69	102,585	102,585
<b>Total</b>	<b>5,314.69</b>	<b>4,289.98</b>	<b>2,142.82</b>	<b>12,185,905</b>	<b>12,185,905</b>

### 4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
General Office Building	7.10	7.10	7.10	33.00	48.00	19.00	100	0	0
Parking Lot	7.10	7.10	7.10	0.00	0.00	0.00	100	0	0
Regional Shopping Center	7.10	7.10	7.10	16.30	64.70	19.00	100	0	0
Unrefrigerated Warehouse-No	7.10	7.10	7.10	59.00	0.00	41.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.535275	0.058759	0.178478	0.127034	0.038632	0.006246	0.015618	0.028471	0.002426	0.003171	0.003696	0.000547	0.001645

**5.0 Energy Detail**

**2.4 Fleet Mix**

Historical Energy Use: Y

**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					
NaturalGas Mitigated	0.0207	0.1880	0.1579	1.1300e-003		0.0143	0.0143		0.0143	0.0143	0.0000	204.6229	204.6229	3.9200e-003	3.7500e-003	205.8682
NaturalGas Unmitigated	0.0207	0.1880	0.1579	1.1300e-003		0.0143	0.0143		0.0143	0.0143	0.0000	204.6229	204.6229	3.9200e-003	3.7500e-003	205.8682
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	7,853.0175	7,853.0175	0.1855	0.0384	7,868.8080
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	7,853.0175	7,853.0175	0.1855	0.0384	7,868.8080

### 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					
General Office Building	2.64213e+006	0.0143	0.1295	0.1088	7.8000e-004		9.8400e-003	9.8400e-003		9.8400e-003	9.8400e-003	0.0000	140.9942	140.9942	2.7000e-003	2.5800e-003	141.8523
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
Regional Shopping Center	1.18076e+006	6.3700e-003	0.0579	0.0486	3.5000e-004		4.4000e-003	4.4000e-003		4.4000e-003	4.4000e-003	0.0000	63.0099	63.0099	1.2100e-003	1.1600e-003	63.3934
Unrefrigerated Warehouse-No Rail	11596	6.0000e-005	5.7000e-004	4.8000e-004	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.6188	0.6188	1.0000e-005	1.0000e-005	0.6226
<b>Total</b>		<b>0.0207</b>	<b>0.1880</b>	<b>0.1579</b>	<b>1.1300e-003</b>		<b>0.0143</b>	<b>0.0143</b>		<b>0.0143</b>	<b>0.0143</b>	<b>0.0000</b>	<b>204.6229</b>	<b>204.6229</b>	<b>3.9200e-003</b>	<b>3.7500e-003</b>	<b>205.8682</b>

### 5.2 Energy by Land Use - NaturalGas

#### 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					
General Office Building	2.64213e+006	0.0143	0.1295	0.1088	7.8000e-004		9.8400e-003	9.8400e-003		9.8400e-003	9.8400e-003	0.0000	140.9942	140.9942	2.7000e-003	2.5800e-003	141.8523
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
Regional Shopping Center	1.18076e+006	6.3700e-003	0.0579	0.0486	3.5000e-004		4.4000e-003	4.4000e-003		4.4000e-003	4.4000e-003	0.0000	63.0099	63.0099	1.2100e-003	1.1600e-003	63.3934
Unrefrigerated Warehouse-No Rail	11596	6.0000e-005	5.7000e-004	4.8000e-004	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.6188	0.6188	1.0000e-005	1.0000e-005	0.6226
<b>Total</b>		<b>0.0207</b>	<b>0.1880</b>	<b>0.1579</b>	<b>1.1300e-003</b>		<b>0.0143</b>	<b>0.0143</b>		<b>0.0143</b>	<b>0.0143</b>	<b>0.0000</b>	<b>204.6229</b>	<b>204.6229</b>	<b>3.9200e-003</b>	<b>3.7500e-003</b>	<b>205.8682</b>

### 5.3 Energy by Land Use - Electricity

#### Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	3.23682e+006	1,802.7862	0.0426	8.8100e-003	1,806.4112
Parking Lot	457600	254.8656	6.0200e-003	1.2500e-003	255.3781
Regional Shopping Center	1.03544e+007	5,766.9854	0.1362	0.0282	5,778.5814
Unrefrigerated Warehouse-No Rail	50955.5	28.3803	6.7000e-004	1.4000e-004	28.4373
<b>Total</b>		<b>7,853.0175</b>	<b>0.1855</b>	<b>0.0384</b>	<b>7,868.8080</b>

### 5.3 Energy by Land Use - Electricity

#### Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	3.23682e+006	1,802.7862	0.0426	8.8100e-003	1,806.4112
Parking Lot	457600	254.8656	6.0200e-003	1.2500e-003	255.3781
Regional Shopping Center	1.03544e+007	5,766.9854	0.1362	0.0282	5,778.5814
Unrefrigerated Warehouse-No Rail	50955.5	28.3803	6.7000e-004	1.4000e-004	28.4373
<b>Total</b>		<b>7,853.0175</b>	<b>0.1855</b>	<b>0.0384</b>	<b>7,868.8080</b>

### 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	6.0629	2.8000e-004	0.0290	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	0.0539	0.0539	1.6000e-004	0.0000	0.0573
Unmitigated	6.0629	2.8000e-004	0.0290	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	0.0539	0.0539	1.6000e-004	0.0000	0.0573

## 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	1.0289					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.0311					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.9300e-003	2.8000e-004	0.0290	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	0.0539	0.0539	1.6000e-004	0.0000	0.0573
<b>Total</b>	<b>6.0629</b>	<b>2.8000e-004</b>	<b>0.0290</b>	<b>0.0000</b>		<b>1.1000e-004</b>	<b>1.1000e-004</b>		<b>1.1000e-004</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>0.0539</b>	<b>0.0539</b>	<b>1.6000e-004</b>	<b>0.0000</b>	<b>0.0573</b>

### 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	1.0289					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.0311					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.9300e-003	2.8000e-004	0.0290	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	0.0539	0.0539	1.6000e-004	0.0000	0.0573
<b>Total</b>	<b>6.0629</b>	<b>2.8000e-004</b>	<b>0.0290</b>	<b>0.0000</b>		<b>1.1000e-004</b>	<b>1.1000e-004</b>		<b>1.1000e-004</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>0.0539</b>	<b>0.0539</b>	<b>1.6000e-004</b>	<b>0.0000</b>	<b>0.0573</b>

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	179.6537	0.5207	0.0131	194.6337
Mitigated	179.6537	0.5206	0.0130	194.6256

### 7.2 Water by Land Use

#### Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	6.92138 / 4.24215	78.6408	0.2273	5.7000e-003	85.1815
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8.809 / 5.39899	100.0874	0.2893	7.2500e-003	108.4120
Unrefrigerated Warehouse-No Chill	0.122275 / 0	0.9256	4.0100e-003	1.0000e-004	1.0402
<b>Total</b>		<b>179.6537</b>	<b>0.5207</b>	<b>0.0131</b>	<b>194.6337</b>



## 7.2 Water by Land Use

### Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	6.92138 / 4.24215	78.6408	0.2273	5.6900e-003	85.1780
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8.809 / 5.39899	100.0874	0.2893	7.2400e-003	108.4075
Unrefrigerated Warehouse-No Rail	0.122275 / 0	0.9256	4.0000e-003	1.0000e-004	1.0401
<b>Total</b>		<b>179.6537</b>	<b>0.5206</b>	<b>0.0130</b>	<b>194.6256</b>

## 8.0 Waste Detail

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### 8.1 Mitigation Measures Waste

**Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	180.5016	10.6673	0.0000	404.5157
Unmitigated	180.5016	10.6673	0.0000	404.5157

**8.2 Waste by Land Use**

**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	197.52	40.0948	2.3695	0.0000	89.8550
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	681.21	138.2795	8.1721	0.0000	309.8932
Unrefrigerated Warehouse-No Rail	10.48	2.1274	0.1257	0.0000	4.7675
<b>Total</b>		<b>180.5016</b>	<b>10.6673</b>	<b>0.0000</b>	<b>404.5157</b>

## 8.2 Waste by Land Use

### Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	197.52	40.0948	2.3695	0.0000	89.8550
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	681.21	138.2795	8.1721	0.0000	309.8932
Unrefrigerated Warehouse-No Rail	10.48	2.1274	0.1257	0.0000	4.7675
<b>Total</b>		<b>180.5016</b>	<b>10.6673</b>	<b>0.0000</b>	<b>404.5157</b>

## 9.0 Operational Offroad

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

**Appendix A.2**  
**Construction Emissions Estimates for**  
**The Reef Project (2021)**

**SOLA Village - Proposed Project Construction (CY 2021)**  
**Los Angeles-South Coast County, Annual**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	180.00	1000sqft	0.32	180,000.00	0
Library	17.51	1000sqft	0.03	17,510.00	0
Enclosed Parking with Elevator	2,733.00	Space	1.91	1,093,200.00	0
Health Club	7.90	1000sqft	0.01	7,900.00	0
Hotel	208.00	Room	0.54	302,016.00	0
Apartments Mid Rise	549.00	Dwelling Unit	1.12	549,000.00	1570
Condo/Townhouse	895.00	Dwelling Unit	4.35	895,000.00	2560
Regional Shopping Center	105.06	1000sqft	0.19	105,060.00	0
Regional Shopping Center	30.00	1000sqft	0.05	30,000.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	33
<b>Climate Zone</b>	11			<b>Operational Year</b>	2021
<b>Utility Company</b>	Los Angeles Department of Water & Power				
<b>CO2 Intensity (lb/MW hr)</b>	1227.89	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics -

Land Use - Land use based on site size of 9.7 acres.

Construction Phase - Construction schedule based on Project Description.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Equipment mix based on Project specific estimates.

Off-road Equipment - Equipment mix based on Project specific estimates.

Off-road Equipment - Equipment mix based on Project specific estimates.

Off-road Equipment -

Off-road Equipment - Equipment mix based on Project specific estimates.

Grading - Land use based on site size of 9.7 acres.

Vehicle Trips - Operational emissions evaluated separately.

Woodstoves - Operational emissions evaluated separately.

Consumer Products - Operational emissions evaluated separately.

Area Coating - Operational emissions evaluated separately.

Landscape Equipment - Operational emissions evaluated separately.

Energy Use - Operational emissions evaluated separately.

Water And Wastewater - Operational emissions evaluated separately.

Solid Waste - Operational emissions evaluated separately.

Construction Off-road Equipment Mitigation - All off-road equipment to be US EPA - Tier 3 emission standards. Watering 3 times/day for fugitive dust control.

Architectural Coating - None.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	2,603,529.00	1,301,764.50
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	2,603,529.00	1,301,764.50
tblArchitecturalCoating	ConstArea_Residential_Exterior	974,700.00	0.00
tblArchitecturalCoating	ConstArea_Residential_Interior	2,924,100.00	0.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	0



tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	20.00	304.00
tblConstructionPhase	NumDays	20.00	327.00
tblConstructionPhase	NumDays	230.00	587.00
tblConstructionPhase	NumDays	230.00	631.00
tblConstructionPhase	NumDays	20.00	21.00
tblConstructionPhase	NumDays	20.00	43.00
tblConstructionPhase	NumDays	20.00	24.00
tblConstructionPhase	NumDays	10.00	23.00
tblConstructionPhase	PhaseEndDate	9/30/2019	7/31/2018
tblConstructionPhase	PhaseEndDate	7/4/2022	4/1/2021
tblConstructionPhase	PhaseEndDate	4/29/2016	4/30/2016
tblConstructionPhase	PhaseEndDate	5/5/2021	4/1/2021
tblConstructionPhase	PhaseStartDate	8/1/2018	6/1/2017
tblConstructionPhase	PhaseStartDate	4/2/2021	1/1/2020
tblConstructionPhase	PhaseStartDate	4/2/2021	3/1/2021
tblEnergyUse	LightingElect	741.44	0.00
tblEnergyUse	LightingElect	1,001.10	0.00
tblEnergyUse	LightingElect	2.63	0.00
tblEnergyUse	LightingElect	4.29	0.00
tblEnergyUse	LightingElect	3.55	0.00
tblEnergyUse	LightingElect	2.49	0.00
tblEnergyUse	LightingElect	3.55	0.00
tblEnergyUse	LightingElect	7.04	0.00
tblEnergyUse	NT24E	2,553.86	0.00
tblEnergyUse	NT24E	3,125.85	0.00
tblEnergyUse	NT24E	0.19	0.00
tblEnergyUse	NT24E	4.62	0.00



tblEnergyUse	NT24E	5.75	0.00
tblEnergyUse	NT24E	2.89	0.00
tblEnergyUse	NT24E	5.75	0.00
tblEnergyUse	NT24E	3.23	0.00
tblEnergyUse	NT24NG	1,662.00	0.00
tblEnergyUse	NT24NG	3,046.55	0.00
tblEnergyUse	NT24NG	0.39	0.00
tblEnergyUse	NT24NG	4.45	0.00
tblEnergyUse	NT24NG	4.06	0.00
tblEnergyUse	NT24NG	4.45	0.00
tblEnergyUse	NT24NG	0.49	0.00
tblEnergyUse	T24E	185.97	0.00
tblEnergyUse	T24E	230.21	0.00
tblEnergyUse	T24E	3.92	0.00
tblEnergyUse	T24E	5.62	0.00
tblEnergyUse	T24E	2.75	0.00
tblEnergyUse	T24E	3.12	0.00
tblEnergyUse	T24E	2.75	0.00
tblEnergyUse	T24E	4.90	0.00
tblEnergyUse	T24NG	5,157.80	0.00
tblEnergyUse	T24NG	14,173.61	0.00
tblEnergyUse	T24NG	10.54	0.00
tblEnergyUse	T24NG	14.36	0.00
tblEnergyUse	T24NG	20.96	0.00
tblEnergyUse	T24NG	14.36	0.00
tblEnergyUse	T24NG	1.21	0.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceDayYear	25.00	0.00

tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	466.65	0.00
tblFireplaces	NumberGas	760.75	0.00
tblFireplaces	NumberNoFireplace	54.90	0.00
tblFireplaces	NumberNoFireplace	89.50	0.00
tblFireplaces	NumberWood	27.45	0.00
tblFireplaces	NumberWood	44.75	0.00
tblGrading	AcresOfGrading	0.00	9.70
tblGrading	MaterialExported	0.00	60,000.00
tblLandUse	LotAcreage	4.13	0.32
tblLandUse	LotAcreage	0.40	0.03
tblLandUse	LotAcreage	24.60	1.91
tblLandUse	LotAcreage	0.18	0.01
tblLandUse	LotAcreage	6.93	0.54
tblLandUse	LotAcreage	14.45	1.12
tblLandUse	LotAcreage	55.94	4.35
tblLandUse	LotAcreage	2.41	0.19
tblLandUse	LotAcreage	0.69	0.05
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblProjectCharacteristics	OperationalYear	2014	2021
tblSolidWaste	SolidWasteGenerationRate	252.54	0.00
tblSolidWaste	SolidWasteGenerationRate	411.70	0.00
tblSolidWaste	SolidWasteGenerationRate	167.40	0.00
tblSolidWaste	SolidWasteGenerationRate	45.03	0.00
tblSolidWaste	SolidWasteGenerationRate	113.88	0.00
tblSolidWaste	SolidWasteGenerationRate	16.13	0.00
tblSolidWaste	SolidWasteGenerationRate	141.81	0.00
tblVehicleTrips	ST_TR	7.16	0.00
tblVehicleTrips	ST_TR	7.16	0.00
tblVehicleTrips	ST_TR	2.37	0.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	8.19	0.00
tblVehicleTrips	ST_TR	46.55	0.00
tblVehicleTrips	ST_TR	49.97	0.00
tblVehicleTrips	SU_TR	6.07	0.00
tblVehicleTrips	SU_TR	6.07	0.00
tblVehicleTrips	SU_TR	0.98	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	5.95	0.00
tblVehicleTrips	SU_TR	25.49	0.00
tblVehicleTrips	SU_TR	25.24	0.00
tblVehicleTrips	WD_TR	6.59	0.00

tblVehicleTrips	WD_TR	6.59	0.00
tblVehicleTrips	WD_TR	11.01	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	8.17	0.00
tblVehicleTrips	WD_TR	56.24	0.00
tblVehicleTrips	WD_TR	42.94	0.00
tblWater	IndoorWaterUseRate	35,769,560.07	0.00
tblWater	IndoorWaterUseRate	58,312,852.93	0.00
tblWater	IndoorWaterUseRate	31,992,074.64	0.00
tblWater	IndoorWaterUseRate	467,230.84	0.00
tblWater	IndoorWaterUseRate	5,276,288.16	0.00
tblWater	IndoorWaterUseRate	547,868.79	0.00
tblWater	IndoorWaterUseRate	10,004,234.75	0.00
tblWater	OutdoorWaterUseRate	22,550,374.82	0.00
tblWater	OutdoorWaterUseRate	36,762,450.76	0.00
tblWater	OutdoorWaterUseRate	19,608,045.75	0.00
tblWater	OutdoorWaterUseRate	286,367.29	0.00
tblWater	OutdoorWaterUseRate	586,254.24	0.00
tblWater	OutdoorWaterUseRate	856,922.97	0.00
tblWater	OutdoorWaterUseRate	6,131,627.75	0.00
tblWoodstoves	NumberCatalytic	27.45	0.00
tblWoodstoves	NumberCatalytic	44.75	0.00
tblWoodstoves	NumberNoncatalytic	27.45	0.00
tblWoodstoves	NumberNoncatalytic	44.75	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

## 2.0 Emissions Summary

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### 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					
2016	1.6510	9.9532	18.2911	0.0347	1.9028	0.4372	2.3400	0.5100	0.4092	0.9192	0.0000	2,854.3078	2,854.3078	0.2137	0.0000	2,858.7964
2017	8.5713	13.2443	26.4239	0.0548	3.1136	0.5717	3.6853	0.8338	0.5359	1.3698	0.0000	4,355.5490	4,355.5490	0.3050	0.0000	4,361.9531
2018	7.9873	10.7531	20.3468	0.0458	2.6841	0.4307	3.1148	0.7739	0.4031	1.1770	0.0000	3,577.5671	3,577.5671	0.2497	0.0000	3,582.8099
2019	1.7612	10.6075	21.7488	0.0509	2.8356	0.4198	3.2554	0.7600	0.3932	1.1532	0.0000	3,851.5081	3,851.5081	0.2671	0.0000	3,857.1167
2020	16.4050	9.9888	23.1508	0.0578	3.3446	0.3895	3.7341	0.8953	0.3656	1.2609	0.0000	4,194.9277	4,194.9277	0.2837	0.0000	4,200.8858
2021	4.0556	2.3605	5.6732	0.0146	0.8318	0.0925	0.9243	0.2226	0.0867	0.3093	0.0000	1,055.9655	1,055.9655	0.0763	0.0000	1,057.5668
<b>Total</b>	<b>40.4314</b>	<b>56.9072</b>	<b>115.6346</b>	<b>0.2587</b>	<b>14.7124</b>	<b>2.3414</b>	<b>17.0539</b>	<b>3.9957</b>	<b>2.1937</b>	<b>6.1894</b>	<b>0.0000</b>	<b>19,889.8253</b>	<b>19,889.8253</b>	<b>1.3954</b>	<b>0.0000</b>	<b>19,919.1286</b>



**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	11.9459	0.1727	14.9659	7.9000e-004		0.0824	0.0824		0.0824	0.0824	0.0000	24.4064	24.4064	0.0238	0.0000	24.9060
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>11.9459</b>	<b>0.1727</b>	<b>14.9659</b>	<b>7.9000e-004</b>	<b>0.0000</b>	<b>0.0824</b>	<b>0.0824</b>	<b>0.0000</b>	<b>0.0824</b>	<b>0.0824</b>	<b>0.0000</b>	<b>24.4064</b>	<b>24.4064</b>	<b>0.0238</b>	<b>0.0000</b>	<b>24.9060</b>

## 2.2 Overall Operational

### Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	11.9459	0.1727	14.9659	7.9000e-004		0.0824	0.0824		0.0824	0.0824	0.0000	24.4064	24.4064	0.0238	0.0000	24.9060
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>11.9459</b>	<b>0.1727</b>	<b>14.9659</b>	<b>7.9000e-004</b>	<b>0.0000</b>	<b>0.0824</b>	<b>0.0824</b>	<b>0.0000</b>	<b>0.0824</b>	<b>0.0824</b>	<b>0.0000</b>	<b>24.4064</b>	<b>24.4064</b>	<b>0.0238</b>	<b>0.0000</b>	<b>24.9060</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	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	Demolition	Demolition	4/1/2016	4/30/2016	5	21	
2	Building Construction (WB)	Building Construction	5/1/2016	7/31/2018	5	587	
3	Architectural Coating (WB)	Architectural Coating	6/1/2017	7/31/2018	5	304	
4	Site Preparation	Site Preparation	8/1/2018	8/31/2018	5	23	
5	Grading	Grading	9/1/2018	10/31/2018	5	43	
6	Building Construction (EB)	Building Construction	11/1/2018	4/1/2021	5	631	
7	Architectural Coating (EB)	Architectural Coating	1/1/2020	4/1/2021	5	327	
8	Paving	Paving	3/1/2021	4/1/2021	5	24	

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 9.7**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,301,765; Non-Residential Outdoor: 867,843 (Architectural Coating – sqft)**

**OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	162	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Building Construction (WB)	Cranes	2	7.00	226	0.29
Building Construction (WB)	Forklifts	6	8.00	89	0.20
Building Construction (WB)	Generator Sets	2	8.00	84	0.74
Building Construction (WB)	Tractors/Loaders/Backhoes	6	7.00	97	0.37
Building Construction (WB)	Welders	2	8.00	46	0.45
Architectural Coating (WB)	Air Compressors	1	6.00	78	0.48
Site Preparation	Rubber Tired Dozers	1	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	162	0.38
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction (EB)	Cranes	2	7.00	226	0.29
Building Construction (EB)	Forklifts	6	8.00	89	0.20
Building Construction (EB)	Generator Sets	2	8.00	84	0.74
Building Construction (EB)	Tractors/Loaders/Backhoes	6	7.00	97	0.37
Building Construction (EB)	Welders	2	8.00	46	0.45
Architectural Coating (EB)	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
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
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction (WR)	18	1,737.00	439.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating (WR)	1	347.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	7,500.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction (FR)	18	1,737.00	439.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating (FR)	1	347.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Clean Paved Roads

### 3.2 Demolition - 2016

#### 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	0.0450	0.4794	0.3678	4.2000e-004		0.0241	0.0241		0.0224	0.0224	0.0000	38.9522	38.9522	0.0106	0.0000	39.1747
<b>Total</b>	<b>0.0450</b>	<b>0.4794</b>	<b>0.3678</b>	<b>4.2000e-004</b>		<b>0.0241</b>	<b>0.0241</b>		<b>0.0224</b>	<b>0.0224</b>	<b>0.0000</b>	<b>38.9522</b>	<b>38.9522</b>	<b>0.0106</b>	<b>0.0000</b>	<b>39.1747</b>

### 3.2 Demolition - 2016

#### 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	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	0.0000
Worker	6.9000e-004	1.0000e-003	0.0105	2.0000e-005	1.7300e-003	2.0000e-005	1.7400e-003	4.6000e-004	2.0000e-005	4.7000e-004	0.0000	1.6841	1.6841	1.0000e-004	0.0000	1.6861	
<b>Total</b>	<b>6.9000e-004</b>	<b>1.0000e-003</b>	<b>0.0105</b>	<b>2.0000e-005</b>	<b>1.7300e-003</b>	<b>2.0000e-005</b>	<b>1.7400e-003</b>	<b>4.6000e-004</b>	<b>2.0000e-005</b>	<b>4.7000e-004</b>	<b>0.0000</b>	<b>1.6841</b>	<b>1.6841</b>	<b>1.0000e-004</b>	<b>0.0000</b>	<b>1.6861</b>	

#### 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	9.9500e-003	0.1970	0.2653	4.2000e-004		9.2600e-003	9.2600e-003		9.2600e-003	9.2600e-003	0.0000	38.9522	38.9522	0.0106	0.0000	39.1746
<b>Total</b>	<b>9.9500e-003</b>	<b>0.1970</b>	<b>0.2653</b>	<b>4.2000e-004</b>		<b>9.2600e-003</b>	<b>9.2600e-003</b>		<b>9.2600e-003</b>	<b>9.2600e-003</b>	<b>0.0000</b>	<b>38.9522</b>	<b>38.9522</b>	<b>0.0106</b>	<b>0.0000</b>	<b>39.1746</b>

### 3.2 Demolition - 2016

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	1.0000e-003	0.0105	2.0000e-005	1.7300e-003	2.0000e-005	1.7400e-003	4.6000e-004	2.0000e-005	4.7000e-004	0.0000	1.6841	1.6841	1.0000e-004	0.0000	1.6861
<b>Total</b>	<b>6.9000e-004</b>	<b>1.0000e-003</b>	<b>0.0105</b>	<b>2.0000e-005</b>	<b>1.7300e-003</b>	<b>2.0000e-005</b>	<b>1.7400e-003</b>	<b>4.6000e-004</b>	<b>2.0000e-005</b>	<b>4.7000e-004</b>	<b>0.0000</b>	<b>1.6841</b>	<b>1.6841</b>	<b>1.0000e-004</b>	<b>0.0000</b>	<b>1.6861</b>

### 3.3 Building Construction (WB) - 2016

#### 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	0.5961	4.9886	3.2387	4.6900e-003		0.3443	0.3443		0.3235	0.3235	0.0000	423.7688	423.7688	0.1051	0.0000	425.9759
<b>Total</b>	<b>0.5961</b>	<b>4.9886</b>	<b>3.2387</b>	<b>4.6900e-003</b>		<b>0.3443</b>	<b>0.3443</b>		<b>0.3235</b>	<b>0.3235</b>	<b>0.0000</b>	<b>423.7688</b>	<b>423.7688</b>	<b>0.1051</b>	<b>0.0000</b>	<b>425.9759</b>

### 3.3 Building Construction (WB) - 2016

#### 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	0.3454	3.5144	4.5649	8.4200e-003	0.2356	0.0528	0.2884	0.0672	0.0485	0.1157	0.0000	764.7318	764.7318	5.7000e-003	0.0000	764.8515
Worker	0.6639	0.9698	10.1093	0.0212	1.6655	0.0161	1.6816	0.4424	0.0148	0.4571	0.0000	1,625.1709	1,625.1709	0.0923	0.0000	1,627.1081
<b>Total</b>	<b>1.0092</b>	<b>4.4842</b>	<b>14.6741</b>	<b>0.0296</b>	<b>1.9011</b>	<b>0.0689</b>	<b>1.9699</b>	<b>0.5095</b>	<b>0.0633</b>	<b>0.5728</b>	<b>0.0000</b>	<b>2,389.9027</b>	<b>2,389.9027</b>	<b>0.0980</b>	<b>0.0000</b>	<b>2,391.9596</b>

#### 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	0.1175	2.4805	3.1177	4.6900e-003		0.1578	0.1578		0.1578	0.1578	0.0000	423.7683	423.7683	0.1051	0.0000	425.9754
<b>Total</b>	<b>0.1175</b>	<b>2.4805</b>	<b>3.1177</b>	<b>4.6900e-003</b>		<b>0.1578</b>	<b>0.1578</b>		<b>0.1578</b>	<b>0.1578</b>	<b>0.0000</b>	<b>423.7683</b>	<b>423.7683</b>	<b>0.1051</b>	<b>0.0000</b>	<b>425.9754</b>

**3.3 Building Construction (WB) - 2016****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	0.3454	3.5144	4.5649	8.4200e-003	0.2356	0.0528	0.2884	0.0672	0.0485	0.1157	0.0000	764.7318	764.7318	5.7000e-003	0.0000	764.8515
Worker	0.6639	0.9698	10.1093	0.0212	1.6655	0.0161	1.6816	0.4424	0.0148	0.4571	0.0000	1,625.1709	1,625.1709	0.0923	0.0000	1,627.1081
<b>Total</b>	<b>1.0092</b>	<b>4.4842</b>	<b>14.6741</b>	<b>0.0296</b>	<b>1.9011</b>	<b>0.0689</b>	<b>1.9699</b>	<b>0.5095</b>	<b>0.0633</b>	<b>0.5728</b>	<b>0.0000</b>	<b>2,389.9027</b>	<b>2,389.9027</b>	<b>0.0980</b>	<b>0.0000</b>	<b>2,391.9596</b>

**3.3 Building Construction (WB) - 2017****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.8066	6.8655	4.7136	6.9700e-003		0.4631	0.4631		0.4350	0.4350	0.0000	622.6457	622.6457	0.1532	0.0000	625.8638
<b>Total</b>	<b>0.8066</b>	<b>6.8655</b>	<b>4.7136</b>	<b>6.9700e-003</b>		<b>0.4631</b>	<b>0.4631</b>		<b>0.4350</b>	<b>0.4350</b>	<b>0.0000</b>	<b>622.6457</b>	<b>622.6457</b>	<b>0.1532</b>	<b>0.0000</b>	<b>625.8638</b>

### 3.3 Building Construction (WB) - 2017

#### 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	0.0000
Vendor	0.4678	4.7573	6.4178	0.0125	0.3502	0.0699	0.4200	0.0999	0.0642	0.1641	0.0000	1,118.0208	1,118.0208	8.2000e-003	0.0000	0.0000	1,118.1930
Worker	0.8834	1.3033	13.5661	0.0315	2.4744	0.0229	2.4973	0.6572	0.0211	0.6783	0.0000	2,324.0550	2,324.0550	0.1267	0.0000	0.0000	2,326.7151
<b>Total</b>	<b>1.3512</b>	<b>6.0605</b>	<b>19.9840</b>	<b>0.0440</b>	<b>2.8246</b>	<b>0.0927</b>	<b>2.9173</b>	<b>0.7571</b>	<b>0.0853</b>	<b>0.8424</b>	<b>0.0000</b>	<b>3,442.0758</b>	<b>3,442.0758</b>	<b>0.1349</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3,444.9081</b>

#### 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	0.1745	3.6853	4.6321	6.9700e-003		0.2344	0.2344		0.2344	0.2344	0.0000	622.6450	622.6450	0.1532	0.0000	0.0000	625.8631
<b>Total</b>	<b>0.1745</b>	<b>3.6853</b>	<b>4.6321</b>	<b>6.9700e-003</b>		<b>0.2344</b>	<b>0.2344</b>		<b>0.2344</b>	<b>0.2344</b>	<b>0.0000</b>	<b>622.6450</b>	<b>622.6450</b>	<b>0.1532</b>	<b>0.0000</b>	<b>0.0000</b>	<b>625.8631</b>



### 3.3 Building Construction (WB) - 2017

#### 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	0.0000
Vendor	0.4678	4.7573	6.4178	0.0125	0.3502	0.0699	0.4200	0.0999	0.0642	0.1641	0.0000	1,118.0208	1,118.0208	8.2000e-003	0.0000	0.0000	1,118.1930
Worker	0.8834	1.3033	13.5661	0.0315	2.4744	0.0229	2.4973	0.6572	0.0211	0.6783	0.0000	2,324.0550	2,324.0550	0.1267	0.0000	0.0000	2,326.7151
<b>Total</b>	<b>1.3512</b>	<b>6.0605</b>	<b>19.9840</b>	<b>0.0440</b>	<b>2.8246</b>	<b>0.0927</b>	<b>2.9173</b>	<b>0.7571</b>	<b>0.0853</b>	<b>0.8424</b>	<b>0.0000</b>	<b>3,442.0758</b>	<b>3,442.0758</b>	<b>0.1349</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3,444.9081</b>

### 3.3 Building Construction (WB) - 2018

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr										MT/yr						
Off-Road	0.4056	3.5357	2.6650	4.0700e-003		0.2271	0.2271		0.2135	0.2135	0.0000	359.8899	359.8899	0.0881	0.0000	0.0000	361.7394
<b>Total</b>	<b>0.4056</b>	<b>3.5357</b>	<b>2.6650</b>	<b>4.0700e-003</b>		<b>0.2271</b>	<b>0.2271</b>		<b>0.2135</b>	<b>0.2135</b>	<b>0.0000</b>	<b>359.8899</b>	<b>359.8899</b>	<b>0.0881</b>	<b>0.0000</b>	<b>0.0000</b>	<b>361.7394</b>

### 3.3 Building Construction (WB) - 2018

#### 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	0.2569	2.5558	3.6014	7.3000e-003	0.2048	0.0385	0.2432	0.0584	0.0354	0.0938	0.0000	642.8124	642.8124	4.7700e-003	0.0000	642.9126
Worker	0.4633	0.6916	7.1827	0.0184	1.4466	0.0130	1.4595	0.3842	0.0120	0.3962	0.0000	1,308.8843	1,308.8843	0.0688	0.0000	1,310.3288
<b>Total</b>	<b>0.7202</b>	<b>3.2474</b>	<b>10.7841</b>	<b>0.0257</b>	<b>1.6513</b>	<b>0.0514</b>	<b>1.7027</b>	<b>0.4426</b>	<b>0.0474</b>	<b>0.4900</b>	<b>0.0000</b>	<b>1,951.6967</b>	<b>1,951.6967</b>	<b>0.0736</b>	<b>0.0000</b>	<b>1,953.2413</b>

#### 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	0.1020	2.1545	2.7080	4.0700e-003		0.1370	0.1370		0.1370	0.1370	0.0000	359.8895	359.8895	0.0881	0.0000	361.7390
<b>Total</b>	<b>0.1020</b>	<b>2.1545</b>	<b>2.7080</b>	<b>4.0700e-003</b>		<b>0.1370</b>	<b>0.1370</b>		<b>0.1370</b>	<b>0.1370</b>	<b>0.0000</b>	<b>359.8895</b>	<b>359.8895</b>	<b>0.0881</b>	<b>0.0000</b>	<b>361.7390</b>

### 3.3 Building Construction (WB) - 2018

#### 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	0.0000
Vendor	0.2569	2.5558	3.6014	7.3000e-003	0.2048	0.0385	0.2432	0.0584	0.0354	0.0938	0.0000	642.8124	642.8124	4.7700e-003	0.0000	0.0000	642.9126
Worker	0.4633	0.6916	7.1827	0.0184	1.4466	0.0130	1.4595	0.3842	0.0120	0.3962	0.0000	1,308.8843	1,308.8843	0.0688	0.0000	0.0000	1,310.3288
<b>Total</b>	<b>0.7202</b>	<b>3.2474</b>	<b>10.7841</b>	<b>0.0257</b>	<b>1.6513</b>	<b>0.0514</b>	<b>1.7027</b>	<b>0.4426</b>	<b>0.0474</b>	<b>0.4900</b>	<b>0.0000</b>	<b>1,951.6967</b>	<b>1,951.6967</b>	<b>0.0736</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1,953.2413</b>

### 3.4 Architectural Coating (WB) - 2017

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr										MT/yr						
Archit. Coating	6.2851					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Off-Road	0.0253	0.1661	0.1420	2.3000e-004		0.0132	0.0132		0.0132	0.0132	0.0000	19.4047	19.4047	2.0500e-003	0.0000	0.0000	19.4478
<b>Total</b>	<b>6.3103</b>	<b>0.1661</b>	<b>0.1420</b>	<b>2.3000e-004</b>		<b>0.0132</b>	<b>0.0132</b>		<b>0.0132</b>	<b>0.0132</b>	<b>0.0000</b>	<b>19.4047</b>	<b>19.4047</b>	<b>2.0500e-003</b>	<b>0.0000</b>	<b>0.0000</b>	<b>19.4478</b>

### 3.4 Architectural Coating (WB) - 2017

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1032	0.1522	1.5844	3.6700e-003	0.2890	2.6700e-003	0.2917	0.0768	2.4600e-003	0.0792	0.0000	271.4228	271.4228	0.0148	0.0000	271.7335
<b>Total</b>	<b>0.1032</b>	<b>0.1522</b>	<b>1.5844</b>	<b>3.6700e-003</b>	<b>0.2890</b>	<b>2.6700e-003</b>	<b>0.2917</b>	<b>0.0768</b>	<b>2.4600e-003</b>	<b>0.0792</b>	<b>0.0000</b>	<b>271.4228</b>	<b>271.4228</b>	<b>0.0148</b>	<b>0.0000</b>	<b>271.7335</b>

#### 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	6.2851					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.5200e-003	0.1031	0.1393	2.3000e-004		7.2300e-003	7.2300e-003		7.2300e-003	7.2300e-003	0.0000	19.4047	19.4047	2.0500e-003	0.0000	19.4477
<b>Total</b>	<b>6.2896</b>	<b>0.1031</b>	<b>0.1393</b>	<b>2.3000e-004</b>		<b>7.2300e-003</b>	<b>7.2300e-003</b>		<b>7.2300e-003</b>	<b>7.2300e-003</b>	<b>0.0000</b>	<b>19.4047</b>	<b>19.4047</b>	<b>2.0500e-003</b>	<b>0.0000</b>	<b>19.4477</b>

### 3.4 Architectural Coating (WB) - 2017

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1032	0.1522	1.5844	3.6700e-003	0.2890	2.6700e-003	0.2917	0.0768	2.4600e-003	0.0792	0.0000	271.4228	271.4228	0.0148	0.0000	271.7335
<b>Total</b>	<b>0.1032</b>	<b>0.1522</b>	<b>1.5844</b>	<b>3.6700e-003</b>	<b>0.2890</b>	<b>2.6700e-003</b>	<b>0.2917</b>	<b>0.0768</b>	<b>2.4600e-003</b>	<b>0.0792</b>	<b>0.0000</b>	<b>271.4228</b>	<b>271.4228</b>	<b>0.0148</b>	<b>0.0000</b>	<b>271.7335</b>

### 3.4 Architectural Coating (WB) - 2018

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.2851					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0227	0.1524	0.1409	2.3000e-004		0.0114	0.0114		0.0114	0.0114	0.0000	19.4048	19.4048	1.8400e-003	0.0000	19.4435
<b>Total</b>	<b>6.3078</b>	<b>0.1524</b>	<b>0.1409</b>	<b>2.3000e-004</b>		<b>0.0114</b>	<b>0.0114</b>		<b>0.0114</b>	<b>0.0114</b>	<b>0.0000</b>	<b>19.4048</b>	<b>19.4048</b>	<b>1.8400e-003</b>	<b>0.0000</b>	<b>19.4435</b>

### 3.4 Architectural Coating (WB) - 2018

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0925	0.1382	1.4349	3.6700e-003	0.2890	2.5900e-003	0.2916	0.0768	2.3900e-003	0.0792	0.0000	261.4755	261.4755	0.0137	0.0000	261.7640
<b>Total</b>	<b>0.0925</b>	<b>0.1382</b>	<b>1.4349</b>	<b>3.6700e-003</b>	<b>0.2890</b>	<b>2.5900e-003</b>	<b>0.2916</b>	<b>0.0768</b>	<b>2.3900e-003</b>	<b>0.0792</b>	<b>0.0000</b>	<b>261.4755</b>	<b>261.4755</b>	<b>0.0137</b>	<b>0.0000</b>	<b>261.7640</b>

#### 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	6.2851					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.5200e-003	0.1031	0.1393	2.3000e-004		7.2300e-003	7.2300e-003		7.2300e-003	7.2300e-003	0.0000	19.4047	19.4047	1.8400e-003	0.0000	19.4435
<b>Total</b>	<b>6.2896</b>	<b>0.1031</b>	<b>0.1393</b>	<b>2.3000e-004</b>		<b>7.2300e-003</b>	<b>7.2300e-003</b>		<b>7.2300e-003</b>	<b>7.2300e-003</b>	<b>0.0000</b>	<b>19.4047</b>	<b>19.4047</b>	<b>1.8400e-003</b>	<b>0.0000</b>	<b>19.4435</b>

### 3.4 Architectural Coating (WB) - 2018

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0925	0.1382	1.4349	3.6700e-003	0.2890	2.5900e-003	0.2916	0.0768	2.3900e-003	0.0792	0.0000	261.4755	261.4755	0.0137	0.0000	261.7640
<b>Total</b>	<b>0.0925</b>	<b>0.1382</b>	<b>1.4349</b>	<b>3.6700e-003</b>	<b>0.2890</b>	<b>2.5900e-003</b>	<b>0.2916</b>	<b>0.0768</b>	<b>2.3900e-003</b>	<b>0.0792</b>	<b>0.0000</b>	<b>261.4755</b>	<b>261.4755</b>	<b>0.0137</b>	<b>0.0000</b>	<b>261.7640</b>

### 3.5 Site Preparation - 2018

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0693	0.0000	0.0693	0.0381	0.0000	0.0381	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0246	0.2555	0.2106	2.5000e-004		0.0148	0.0148		0.0136	0.0136	0.0000	22.4023	22.4023	6.9700e-003	0.0000	22.5487
<b>Total</b>	<b>0.0246</b>	<b>0.2555</b>	<b>0.2106</b>	<b>2.5000e-004</b>	<b>0.0693</b>	<b>0.0148</b>	<b>0.0840</b>	<b>0.0381</b>	<b>0.0136</b>	<b>0.0517</b>	<b>0.0000</b>	<b>22.4023</b>	<b>22.4023</b>	<b>6.9700e-003</b>	<b>0.0000</b>	<b>22.5487</b>

### 3.5 Site Preparation - 2018

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	7.8000e-004	8.1300e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6500e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4823	1.4823	8.0000e-005	0.0000	1.4839
<b>Total</b>	<b>5.2000e-004</b>	<b>7.8000e-004</b>	<b>8.1300e-003</b>	<b>2.0000e-005</b>	<b>1.6400e-003</b>	<b>1.0000e-005</b>	<b>1.6500e-003</b>	<b>4.4000e-004</b>	<b>1.0000e-005</b>	<b>4.5000e-004</b>	<b>0.0000</b>	<b>1.4823</b>	<b>1.4823</b>	<b>8.0000e-005</b>	<b>0.0000</b>	<b>1.4839</b>

#### 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					0.0270	0.0000	0.0270	0.0149	0.0000	0.0149	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.9800e-003	0.1278	0.1615	2.5000e-004		7.4100e-003	7.4100e-003		7.4100e-003	7.4100e-003	0.0000	22.4022	22.4022	6.9700e-003	0.0000	22.5487
<b>Total</b>	<b>5.9800e-003</b>	<b>0.1278</b>	<b>0.1615</b>	<b>2.5000e-004</b>	<b>0.0270</b>	<b>7.4100e-003</b>	<b>0.0344</b>	<b>0.0149</b>	<b>7.4100e-003</b>	<b>0.0223</b>	<b>0.0000</b>	<b>22.4022</b>	<b>22.4022</b>	<b>6.9700e-003</b>	<b>0.0000</b>	<b>22.5487</b>



### 3.5 Site Preparation - 2018

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	7.8000e-004	8.1300e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6500e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4823	1.4823	8.0000e-005	0.0000	1.4839
<b>Total</b>	<b>5.2000e-004</b>	<b>7.8000e-004</b>	<b>8.1300e-003</b>	<b>2.0000e-005</b>	<b>1.6400e-003</b>	<b>1.0000e-005</b>	<b>1.6500e-003</b>	<b>4.4000e-004</b>	<b>1.0000e-005</b>	<b>4.5000e-004</b>	<b>0.0000</b>	<b>1.4823</b>	<b>1.4823</b>	<b>8.0000e-005</b>	<b>0.0000</b>	<b>1.4839</b>

### 3.6 Grading - 2018

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1380	0.0000	0.1380	0.0722	0.0000	0.0722	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0530	0.5576	0.4878	6.2000e-004		0.0303	0.0303		0.0278	0.0278	0.0000	56.5635	56.5635	0.0176	0.0000	56.9333
<b>Total</b>	<b>0.0530</b>	<b>0.5576</b>	<b>0.4878</b>	<b>6.2000e-004</b>	<b>0.1380</b>	<b>0.0303</b>	<b>0.1683</b>	<b>0.0722</b>	<b>0.0278</b>	<b>0.1001</b>	<b>0.0000</b>	<b>56.5635</b>	<b>56.5635</b>	<b>0.0176</b>	<b>0.0000</b>	<b>56.9333</b>

### 3.6 Grading - 2018

#### 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	0.0634	0.9451	0.7933	2.7900e-003	0.0642	0.0142	0.0784	0.0176	0.0131	0.0307	0.0000	247.5190	247.5190	1.8900e-003	0.0000	247.5587
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	1.1300e-003	1.6900e-003	0.0176	4.0000e-005	3.5300e-003	3.0000e-005	3.5700e-003	9.4000e-004	3.0000e-005	9.7000e-004	0.0000	3.1976	3.1976	1.7000e-004	0.0000	3.2011
<b>Total</b>	<b>0.0646</b>	<b>0.9468</b>	<b>0.8108</b>	<b>2.8300e-003</b>	<b>0.0677</b>	<b>0.0143</b>	<b>0.0820</b>	<b>0.0186</b>	<b>0.0131</b>	<b>0.0317</b>	<b>0.0000</b>	<b>250.7165</b>	<b>250.7165</b>	<b>2.0600e-003</b>	<b>0.0000</b>	<b>250.7598</b>

#### 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					0.0538	0.0000	0.0538	0.0282	0.0000	0.0282	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0151	0.3099	0.4244	6.2000e-004		0.0165	0.0165		0.0165	0.0165	0.0000	56.5635	56.5635	0.0176	0.0000	56.9333
<b>Total</b>	<b>0.0151</b>	<b>0.3099</b>	<b>0.4244</b>	<b>6.2000e-004</b>	<b>0.0538</b>	<b>0.0165</b>	<b>0.0703</b>	<b>0.0282</b>	<b>0.0165</b>	<b>0.0446</b>	<b>0.0000</b>	<b>56.5635</b>	<b>56.5635</b>	<b>0.0176</b>	<b>0.0000</b>	<b>56.9333</b>

### 3.6 Grading - 2018

#### 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	0.0634	0.9451	0.7933	2.7900e-003	0.0642	0.0142	0.0784	0.0176	0.0131	0.0307	0.0000	247.5190	247.5190	1.8900e-003	0.0000	247.5587
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	1.1300e-003	1.6900e-003	0.0176	4.0000e-005	3.5300e-003	3.0000e-005	3.5700e-003	9.4000e-004	3.0000e-005	9.7000e-004	0.0000	3.1976	3.1976	1.7000e-004	0.0000	3.2011
<b>Total</b>	<b>0.0646</b>	<b>0.9468</b>	<b>0.8108</b>	<b>2.8300e-003</b>	<b>0.0677</b>	<b>0.0143</b>	<b>0.0820</b>	<b>0.0186</b>	<b>0.0131</b>	<b>0.0317</b>	<b>0.0000</b>	<b>250.7165</b>	<b>250.7165</b>	<b>2.0600e-003</b>	<b>0.0000</b>	<b>250.7598</b>

### 3.7 Building Construction (EB) - 2018

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1148	1.0002	0.7539	1.1500e-003		0.0643	0.0643		0.0604	0.0604	0.0000	101.8110	101.8110	0.0249	0.0000	102.3342
<b>Total</b>	<b>0.1148</b>	<b>1.0002</b>	<b>0.7539</b>	<b>1.1500e-003</b>		<b>0.0643</b>	<b>0.0643</b>		<b>0.0604</b>	<b>0.0604</b>	<b>0.0000</b>	<b>101.8110</b>	<b>101.8110</b>	<b>0.0249</b>	<b>0.0000</b>	<b>102.3342</b>

### 3.7 Building Construction (EB) - 2018

#### 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	0.0727	0.7230	1.0188	2.0600e-003	0.0579	0.0109	0.0688	0.0165	0.0100	0.0265	0.0000	181.8482	181.8482	1.3500e-003	0.0000	181.8766
Worker	0.1311	0.1957	2.0319	5.2000e-003	0.4092	3.6600e-003	0.4129	0.1087	3.3900e-003	0.1121	0.0000	370.2765	370.2765	0.0195	0.0000	370.6851
<b>Total</b>	<b>0.2037</b>	<b>0.9187</b>	<b>3.0508</b>	<b>7.2600e-003</b>	<b>0.4672</b>	<b>0.0145</b>	<b>0.4817</b>	<b>0.1252</b>	<b>0.0134</b>	<b>0.1386</b>	<b>0.0000</b>	<b>552.1247</b>	<b>552.1247</b>	<b>0.0208</b>	<b>0.0000</b>	<b>552.5617</b>

#### 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	0.0289	0.6095	0.7661	1.1500e-003		0.0388	0.0388		0.0388	0.0388	0.0000	101.8108	101.8108	0.0249	0.0000	102.3341
<b>Total</b>	<b>0.0289</b>	<b>0.6095</b>	<b>0.7661</b>	<b>1.1500e-003</b>		<b>0.0388</b>	<b>0.0388</b>		<b>0.0388</b>	<b>0.0388</b>	<b>0.0000</b>	<b>101.8108</b>	<b>101.8108</b>	<b>0.0249</b>	<b>0.0000</b>	<b>102.3341</b>

### 3.7 Building Construction (EB) - 2018

#### 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	0.0727	0.7230	1.0188	2.0600e-003	0.0579	0.0109	0.0688	0.0165	0.0100	0.0265	0.0000	181.8482	181.8482	1.3500e-003	0.0000	181.8766
Worker	0.1311	0.1957	2.0319	5.2000e-003	0.4092	3.6600e-003	0.4129	0.1087	3.3900e-003	0.1121	0.0000	370.2765	370.2765	0.0195	0.0000	370.6851
<b>Total</b>	<b>0.2037</b>	<b>0.9187</b>	<b>3.0508</b>	<b>7.2600e-003</b>	<b>0.4672</b>	<b>0.0145</b>	<b>0.4817</b>	<b>0.1252</b>	<b>0.0134</b>	<b>0.1386</b>	<b>0.0000</b>	<b>552.1247</b>	<b>552.1247</b>	<b>0.0208</b>	<b>0.0000</b>	<b>552.5617</b>

### 3.7 Building Construction (EB) - 2019

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.6138	5.4719	4.4684	7.0000e-003		0.3354	0.3354		0.3154	0.3154	0.0000	611.0604	611.0604	0.1487	0.0000	614.1826
<b>Total</b>	<b>0.6138</b>	<b>5.4719</b>	<b>4.4684</b>	<b>7.0000e-003</b>		<b>0.3354</b>	<b>0.3354</b>		<b>0.3154</b>	<b>0.3154</b>	<b>0.0000</b>	<b>611.0604</b>	<b>611.0604</b>	<b>0.1487</b>	<b>0.0000</b>	<b>614.1826</b>

### 3.7 Building Construction (EB) - 2019

#### 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	0.0000
Vendor	0.4180	4.0467	5.9800	0.0125	0.3516	0.0628	0.4144	0.1003	0.0577	0.1580	0.0000	1,081.1184	1,081.1184	8.0100e-003	0.0000	0.0000	1,081.2867
Worker	0.7294	1.0889	11.3004	0.0315	2.4839	0.0217	2.5056	0.6597	0.0201	0.6798	0.0000	2,159.3293	2,159.3293	0.1104	0.0000	0.0000	2,161.6475
<b>Total</b>	<b>1.1474</b>	<b>5.1356</b>	<b>17.2804</b>	<b>0.0439</b>	<b>2.8356</b>	<b>0.0845</b>	<b>2.9200</b>	<b>0.7600</b>	<b>0.0778</b>	<b>0.8379</b>	<b>0.0000</b>	<b>3,240.4476</b>	<b>3,240.4476</b>	<b>0.1184</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3,242.9341</b>

#### 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	0.1752	3.6995	4.6499	7.0000e-003		0.2353	0.2353		0.2353	0.2353	0.0000	611.0597	611.0597	0.1487	0.0000	0.0000	614.1819
<b>Total</b>	<b>0.1752</b>	<b>3.6995</b>	<b>4.6499</b>	<b>7.0000e-003</b>		<b>0.2353</b>	<b>0.2353</b>		<b>0.2353</b>	<b>0.2353</b>	<b>0.0000</b>	<b>611.0597</b>	<b>611.0597</b>	<b>0.1487</b>	<b>0.0000</b>	<b>0.0000</b>	<b>614.1819</b>

### 3.7 Building Construction (EB) - 2019

#### 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	0.0000
Vendor	0.4180	4.0467	5.9800	0.0125	0.3516	0.0628	0.4144	0.1003	0.0577	0.1580	0.0000	1,081.1184	1,081.1184	8.0100e-003	0.0000	0.0000	1,081.2867
Worker	0.7294	1.0889	11.3004	0.0315	2.4839	0.0217	2.5056	0.6597	0.0201	0.6798	0.0000	2,159.3293	2,159.3293	0.1104	0.0000	0.0000	2,161.6475
<b>Total</b>	<b>1.1474</b>	<b>5.1356</b>	<b>17.2804</b>	<b>0.0439</b>	<b>2.8356</b>	<b>0.0845</b>	<b>2.9200</b>	<b>0.7600</b>	<b>0.0778</b>	<b>0.8379</b>	<b>0.0000</b>	<b>3,240.4476</b>	<b>3,240.4476</b>	<b>0.1184</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3,242.9341</b>

### 3.7 Building Construction (EB) - 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	0.5532	5.0000	4.4038	7.0200e-003		0.2916	0.2916		0.2742	0.2742	0.0000	604.3027	604.3027	0.1472	0.0000	0.0000	607.3945
<b>Total</b>	<b>0.5532</b>	<b>5.0000</b>	<b>4.4038</b>	<b>7.0200e-003</b>		<b>0.2916</b>	<b>0.2916</b>		<b>0.2742</b>	<b>0.2742</b>	<b>0.0000</b>	<b>604.3027</b>	<b>604.3027</b>	<b>0.1472</b>	<b>0.0000</b>	<b>0.0000</b>	<b>607.3945</b>

### 3.7 Building Construction (EB) - 2020

#### 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	0.0000
Vendor	0.4009	3.5526	5.8395	0.0125	0.3531	0.0575	0.4106	0.1007	0.0529	0.1537	0.0000	1,061.0820	1,061.0820	7.8800e-003	0.0000	0.0000	1,061.2476
Worker	0.6860	1.0132	10.5583	0.0316	2.4935	0.0215	2.5150	0.6623	0.0200	0.6822	0.0000	2,080.4787	2,080.4787	0.1050	0.0000	0.0000	2,082.6844
<b>Total</b>	<b>1.0869</b>	<b>4.5658</b>	<b>16.3979</b>	<b>0.0441</b>	<b>2.8465</b>	<b>0.0791</b>	<b>2.9256</b>	<b>0.7630</b>	<b>0.0729</b>	<b>0.8359</b>	<b>0.0000</b>	<b>3,141.5607</b>	<b>3,141.5607</b>	<b>0.1129</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3,143.9320</b>

#### 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	0.1759	3.7136	4.6677	7.0200e-003		0.2362	0.2362		0.2362	0.2362	0.0000	604.3020	604.3020	0.1472	0.0000	0.0000	607.3938
<b>Total</b>	<b>0.1759</b>	<b>3.7136</b>	<b>4.6677</b>	<b>7.0200e-003</b>		<b>0.2362</b>	<b>0.2362</b>		<b>0.2362</b>	<b>0.2362</b>	<b>0.0000</b>	<b>604.3020</b>	<b>604.3020</b>	<b>0.1472</b>	<b>0.0000</b>	<b>0.0000</b>	<b>607.3938</b>



### 3.7 Building Construction (EB) - 2020

#### 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	0.0000
Vendor	0.4009	3.5526	5.8395	0.0125	0.3531	0.0575	0.4106	0.1007	0.0529	0.1537	0.0000	1,061.0820	1,061.0820	7.8800e-003	0.0000	0.0000	1,061.2476
Worker	0.6860	1.0132	10.5583	0.0316	2.4935	0.0215	2.5150	0.6623	0.0200	0.6822	0.0000	2,080.4787	2,080.4787	0.1050	0.0000	0.0000	2,082.6844
<b>Total</b>	<b>1.0869</b>	<b>4.5658</b>	<b>16.3979</b>	<b>0.0441</b>	<b>2.8465</b>	<b>0.0791</b>	<b>2.9256</b>	<b>0.7630</b>	<b>0.0729</b>	<b>0.8359</b>	<b>0.0000</b>	<b>3,141.5607</b>	<b>3,141.5607</b>	<b>0.1129</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3,143.9320</b>

### 3.7 Building Construction (EB) - 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	0.1231	1.1271	1.0750	1.7400e-003		0.0621	0.0621		0.0584	0.0584	0.0000	149.9402	149.9402	0.0361	0.0000	150.6988
<b>Total</b>	<b>0.1231</b>	<b>1.1271</b>	<b>1.0750</b>	<b>1.7400e-003</b>		<b>0.0621</b>	<b>0.0621</b>		<b>0.0584</b>	<b>0.0584</b>	<b>0.0000</b>	<b>149.9402</b>	<b>149.9402</b>	<b>0.0361</b>	<b>0.0000</b>	<b>150.6988</b>

### 3.7 Building Construction (EB) - 2021

#### 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	0.0959	0.7495	1.4106	3.1000e-003	0.0876	0.0130	0.1006	0.0250	0.0120	0.0369	0.0000	263.0433	263.0433	1.9700e-003	0.0000	263.0847
Worker	0.1609	0.2347	2.4576	7.8500e-003	0.6186	5.3300e-003	0.6239	0.1643	4.9400e-003	0.1692	0.0000	508.0533	508.0533	0.0249	0.0000	508.5768
<b>Total</b>	<b>0.2568</b>	<b>0.9842</b>	<b>3.8682</b>	<b>0.0110</b>	<b>0.7062</b>	<b>0.0183</b>	<b>0.7245</b>	<b>0.1893</b>	<b>0.0169</b>	<b>0.2062</b>	<b>0.0000</b>	<b>771.0966</b>	<b>771.0966</b>	<b>0.0269</b>	<b>0.0000</b>	<b>771.6614</b>

#### 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	0.0436	0.9213	1.1580	1.7400e-003		0.0586	0.0586		0.0586	0.0586	0.0000	149.9401	149.9401	0.0361	0.0000	150.6986
<b>Total</b>	<b>0.0436</b>	<b>0.9213</b>	<b>1.1580</b>	<b>1.7400e-003</b>		<b>0.0586</b>	<b>0.0586</b>		<b>0.0586</b>	<b>0.0586</b>	<b>0.0000</b>	<b>149.9401</b>	<b>149.9401</b>	<b>0.0361</b>	<b>0.0000</b>	<b>150.6986</b>

### 3.7 Building Construction (EB) - 2021

#### 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	0.0959	0.7495	1.4106	3.1000e-003	0.0876	0.0130	0.1006	0.0250	0.0120	0.0369	0.0000	263.0433	263.0433	1.9700e-003	0.0000	263.0847
Worker	0.1609	0.2347	2.4576	7.8500e-003	0.6186	5.3300e-003	0.6239	0.1643	4.9400e-003	0.1692	0.0000	508.0533	508.0533	0.0249	0.0000	508.5768
<b>Total</b>	<b>0.2568</b>	<b>0.9842</b>	<b>3.8682</b>	<b>0.0110</b>	<b>0.7062</b>	<b>0.0183</b>	<b>0.7245</b>	<b>0.1893</b>	<b>0.0169</b>	<b>0.2062</b>	<b>0.0000</b>	<b>771.0966</b>	<b>771.0966</b>	<b>0.0269</b>	<b>0.0000</b>	<b>771.6614</b>

### 3.8 Architectural Coating (EB) - 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	14.5962					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Off-Road	0.0317	0.2206	0.2399	3.9000e-004		0.0145	0.0145		0.0145	0.0145	0.0000	33.4476	33.4476	2.5900e-003	0.0000	33.5020
<b>Total</b>	<b>14.6279</b>	<b>0.2206</b>	<b>0.2399</b>	<b>3.9000e-004</b>		<b>0.0145</b>	<b>0.0145</b>		<b>0.0145</b>	<b>0.0145</b>	<b>0.0000</b>	<b>33.4476</b>	<b>33.4476</b>	<b>2.5900e-003</b>	<b>0.0000</b>	<b>33.5020</b>

### 3.8 Architectural Coating (EB) - 2020

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1370	0.2024	2.1092	6.3100e-003	0.4981	4.3000e-003	0.5024	0.1323	3.9900e-003	0.1363	0.0000	415.6167	415.6167	0.0210	0.0000	416.0573
<b>Total</b>	<b>0.1370</b>	<b>0.2024</b>	<b>2.1092</b>	<b>6.3100e-003</b>	<b>0.4981</b>	<b>4.3000e-003</b>	<b>0.5024</b>	<b>0.1323</b>	<b>3.9900e-003</b>	<b>0.1363</b>	<b>0.0000</b>	<b>415.6167</b>	<b>415.6167</b>	<b>0.0210</b>	<b>0.0000</b>	<b>416.0573</b>

#### 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	14.5962					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.7900e-003	0.1778	0.2401	3.9000e-004		0.0125	0.0125		0.0125	0.0125	0.0000	33.4476	33.4476	2.5900e-003	0.0000	33.5020
<b>Total</b>	<b>14.6039</b>	<b>0.1778</b>	<b>0.2401</b>	<b>3.9000e-004</b>		<b>0.0125</b>	<b>0.0125</b>		<b>0.0125</b>	<b>0.0125</b>	<b>0.0000</b>	<b>33.4476</b>	<b>33.4476</b>	<b>2.5900e-003</b>	<b>0.0000</b>	<b>33.5020</b>

### 3.8 Architectural Coating (EB) - 2020

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1370	0.2024	2.1092	6.3100e-003	0.4981	4.3000e-003	0.5024	0.1323	3.9900e-003	0.1363	0.0000	415.6167	415.6167	0.0210	0.0000	416.0573
<b>Total</b>	<b>0.1370</b>	<b>0.2024</b>	<b>2.1092</b>	<b>6.3100e-003</b>	<b>0.4981</b>	<b>4.3000e-003</b>	<b>0.5024</b>	<b>0.1323</b>	<b>3.9900e-003</b>	<b>0.1363</b>	<b>0.0000</b>	<b>415.6167</b>	<b>415.6167</b>	<b>0.0210</b>	<b>0.0000</b>	<b>416.0573</b>

### 3.8 Architectural Coating (EB) - 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	3.6212					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.1100e-003	0.0496	0.0591	1.0000e-004		3.0600e-003	3.0600e-003		3.0600e-003	3.0600e-003	0.0000	8.2981	8.2981	5.7000e-004	0.0000	8.3100
<b>Total</b>	<b>3.6283</b>	<b>0.0496</b>	<b>0.0591</b>	<b>1.0000e-004</b>		<b>3.0600e-003</b>	<b>3.0600e-003</b>		<b>3.0600e-003</b>	<b>3.0600e-003</b>	<b>0.0000</b>	<b>8.2981</b>	<b>8.2981</b>	<b>5.7000e-004</b>	<b>0.0000</b>	<b>8.3100</b>

### 3.8 Architectural Coating (EB) - 2021

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0321	0.0469	0.4910	1.5700e-003	0.1236	1.0600e-003	0.1246	0.0328	9.9000e-004	0.0338	0.0000	101.4937	101.4937	4.9800e-003	0.0000	101.5982
<b>Total</b>	<b>0.0321</b>	<b>0.0469</b>	<b>0.4910</b>	<b>1.5700e-003</b>	<b>0.1236</b>	<b>1.0600e-003</b>	<b>0.1246</b>	<b>0.0328</b>	<b>9.9000e-004</b>	<b>0.0338</b>	<b>0.0000</b>	<b>101.4937</b>	<b>101.4937</b>	<b>4.9800e-003</b>	<b>0.0000</b>	<b>101.5982</b>

#### 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	3.6212					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9300e-003	0.0441	0.0596	1.0000e-004		3.0900e-003	3.0900e-003		3.0900e-003	3.0900e-003	0.0000	8.2981	8.2981	5.7000e-004	0.0000	8.3100
<b>Total</b>	<b>3.6231</b>	<b>0.0441</b>	<b>0.0596</b>	<b>1.0000e-004</b>		<b>3.0900e-003</b>	<b>3.0900e-003</b>		<b>3.0900e-003</b>	<b>3.0900e-003</b>	<b>0.0000</b>	<b>8.2981</b>	<b>8.2981</b>	<b>5.7000e-004</b>	<b>0.0000</b>	<b>8.3100</b>

### 3.8 Architectural Coating (EB) - 2021

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0321	0.0469	0.4910	1.5700e-003	0.1236	1.0600e-003	0.1246	0.0328	9.9000e-004	0.0338	0.0000	101.4937	101.4937	4.9800e-003	0.0000	101.5982
<b>Total</b>	<b>0.0321</b>	<b>0.0469</b>	<b>0.4910</b>	<b>1.5700e-003</b>	<b>0.1236</b>	<b>1.0600e-003</b>	<b>0.1246</b>	<b>0.0328</b>	<b>9.9000e-004</b>	<b>0.0338</b>	<b>0.0000</b>	<b>101.4937</b>	<b>101.4937</b>	<b>4.9800e-003</b>	<b>0.0000</b>	<b>101.5982</b>

### 3.9 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	0.0148	0.1519	0.1722	2.7000e-004		7.9800e-003	7.9800e-003		7.3400e-003	7.3400e-003	0.0000	23.5170	23.5170	7.6100e-003	0.0000	23.6767
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0148</b>	<b>0.1519</b>	<b>0.1722</b>	<b>2.7000e-004</b>		<b>7.9800e-003</b>	<b>7.9800e-003</b>		<b>7.3400e-003</b>	<b>7.3400e-003</b>	<b>0.0000</b>	<b>23.5170</b>	<b>23.5170</b>	<b>7.6100e-003</b>	<b>0.0000</b>	<b>23.6767</b>

### 3.9 Paving - 2021

#### 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	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	0.0000
Worker	5.1000e-004	7.5000e-004	7.8400e-003	3.0000e-005	1.9700e-003	2.0000e-005	1.9900e-003	5.2000e-004	2.0000e-005	5.4000e-004	0.0000	1.6199	1.6199	8.0000e-005	0.0000	1.6216	
<b>Total</b>	<b>5.1000e-004</b>	<b>7.5000e-004</b>	<b>7.8400e-003</b>	<b>3.0000e-005</b>	<b>1.9700e-003</b>	<b>2.0000e-005</b>	<b>1.9900e-003</b>	<b>5.2000e-004</b>	<b>2.0000e-005</b>	<b>5.4000e-004</b>	<b>0.0000</b>	<b>1.6199</b>	<b>1.6199</b>	<b>8.0000e-005</b>	<b>0.0000</b>	<b>1.6216</b>	

#### 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	6.5900e-003	0.1328	0.2031	2.7000e-004		7.1800e-003	7.1800e-003		7.1800e-003	7.1800e-003	0.0000	23.5170	23.5170	7.6100e-003	0.0000	23.6767
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>6.5900e-003</b>	<b>0.1328</b>	<b>0.2031</b>	<b>2.7000e-004</b>		<b>7.1800e-003</b>	<b>7.1800e-003</b>		<b>7.1800e-003</b>	<b>7.1800e-003</b>	<b>0.0000</b>	<b>23.5170</b>	<b>23.5170</b>	<b>7.6100e-003</b>	<b>0.0000</b>	<b>23.6767</b>





### 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	0.00	0.00	0.00		
Condo/Townhouse	0.00	0.00	0.00		
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
Hotel	0.00	0.00	0.00		
Library	0.00	0.00	0.00		
Regional Shopping Center	0.00	0.00	0.00		
Regional Shopping Center	0.00	0.00	0.00		
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		

### 4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Condo/Townhouse	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	52	39	9
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Library	16.60	8.40	6.90	52.00	43.00	5.00	44	44	12
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.527271	0.057774	0.179409	0.125521	0.039563	0.006393	0.017164	0.035220	0.002536	0.003167	0.003715	0.000530	0.001736

### 5.0 Energy Detail

Historical Energy Use: N







### 5.3 Energy by Land Use - Electricity

#### Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000
Library	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

### 5.3 Energy by Land Use - Electricity

#### Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000
Library	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

### 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	11.9459	0.1727	14.9659	7.9000e-004		0.0824	0.0824		0.0824	0.0824	0.0000	24.4064	24.4064	0.0238	0.0000	24.9060
Unmitigated	11.9459	0.1727	14.9659	7.9000e-004		0.0824	0.0824		0.0824	0.0824	0.0000	24.4064	24.4064	0.0238	0.0000	24.9060

## 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	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	11.4898					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.4561	0.1727	14.9659	7.9000e-004		0.0824	0.0824		0.0824	0.0824	0.0000	24.4064	24.4064	0.0238	0.0000	24.9060
<b>Total</b>	<b>11.9459</b>	<b>0.1727</b>	<b>14.9659</b>	<b>7.9000e-004</b>		<b>0.0824</b>	<b>0.0824</b>		<b>0.0824</b>	<b>0.0824</b>	<b>0.0000</b>	<b>24.4064</b>	<b>24.4064</b>	<b>0.0238</b>	<b>0.0000</b>	<b>24.9060</b>



### 6.2 Area by SubCategory

#### Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	11.4898					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.4561	0.1727	14.9659	7.9000e-004		0.0824	0.0824		0.0824	0.0824	0.0000	24.4064	24.4064	0.0238	0.0000	24.9060
<b>Total</b>	<b>11.9459</b>	<b>0.1727</b>	<b>14.9659</b>	<b>7.9000e-004</b>		<b>0.0824</b>	<b>0.0824</b>		<b>0.0824</b>	<b>0.0824</b>	<b>0.0000</b>	<b>24.4064</b>	<b>24.4064</b>	<b>0.0238</b>	<b>0.0000</b>	<b>24.9060</b>

### 7.0 Water Detail

#### 7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

## 7.2 Water by Land Use

### Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	0 / 0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0 / 0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	0 / 0	0.0000	0.0000	0.0000	0.0000
Hotel	0 / 0	0.0000	0.0000	0.0000	0.0000
Library	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## 7.2 Water by Land Use

### Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	0 / 0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0 / 0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	0 / 0	0.0000	0.0000	0.0000	0.0000
Hotel	0 / 0	0.0000	0.0000	0.0000	0.0000
Library	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## 8.0 Waste Detail

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### 8.1 Mitigation Measures Waste

**Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

**8.2 Waste by Land Use****Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000
Library	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

### 8.2 Waste by Land Use

#### Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000
Library	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

### 9.0 Operational Offroad

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

## **Appendix A.3-1**

### **Operational GHG Emissions Estimates for The Reef Project New Development (2020)**

**SOLA Village - Proposed Project (New Development) Operational GHG (CY 2020)**  
**Los Angeles-South Coast County, Annual**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	895.00	Dwelling Unit	55.94	895,000.00	2560
Apartments Mid Rise	549.00	Dwelling Unit	14.45	549,000.00	1570
Hotel	208.00	Room	6.93	302,016.00	0
Regional Shopping Center	105.06	1000sqft	2.41	105,060.00	0
Library	17.51	1000sqft	0.40	17,510.00	0
Health Club	7.88	1000sqft	0.18	7,880.00	0
Enclosed Parking with Elevator	2,733.00	Space	24.60	1,093,200.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	33
<b>Climate Zone</b>	11			<b>Operational Year</b>	2020
<b>Utility Company</b>	Los Angeles Department of Water & Power				
<b>CO2 Intensity (lb/MWhr)</b>	876.63	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**



Project Characteristics - Includes 33% RPS.

Land Use - Land uses based on Project Description.

Construction Phase - Construction emissions evaluated separately.

Off-road Equipment -

Vehicle Trips - Trip rates based on traffic study. All trips are 100% primary trips.

Vehicle Emission Factors - Includes Advanced Clean Car reduction.

Vehicle Emission Factors -

Vehicle Emission Factors -

Woodstoves - Based on Project Description.

Energy Use - Updated to Title 24 - 2013 building standards.

Water And Wastewater - Based on water study.

Land Use Change -

Sequestration -

Energy Mitigation - 75% reduction due to LED lighting. Using Energy Star appliances.

Water Mitigation - Based on CalGreen building code, indoor water usage is reduced by 20%.

Table Name	Column Name	Default Value	New Value
tblEnergyUse	T24E	185.97	139.48
tblEnergyUse	T24E	230.21	172.66
tblEnergyUse	T24E	3.92	2.74
tblEnergyUse	T24E	2.75	1.93
tblEnergyUse	T24E	3.12	2.18
tblEnergyUse	T24E	2.75	1.93
tblEnergyUse	T24E	4.90	3.43
tblEnergyUse	T24NG	5,157.80	3,868.35
tblEnergyUse	T24NG	14,173.61	10,630.21
tblEnergyUse	T24NG	14.36	10.05
tblEnergyUse	T24NG	20.96	14.67

tblEnergyUse	T24NG	14.36	10.05
tblEnergyUse	T24NG	1.21	0.85
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	466.65	0.00
tblFireplaces	NumberGas	760.75	0.00
tblFireplaces	NumberNoFireplace	54.90	0.00
tblFireplaces	NumberNoFireplace	89.50	0.00
tblFireplaces	NumberWood	27.45	0.00
tblFireplaces	NumberWood	44.75	0.00
tblProjectCharacteristics	CO2IntensityFactor	1227.89	876.63
tblProjectCharacteristics	OperationalYear	2014	2020
tblSequestration	NumberOfNewTrees	0.00	258.00
tblVehicleEF	LDA	257.96	247.65
tblVehicleEF	LDA	53.04	51.45
tblVehicleEF	LDT1	318.76	315.02
tblVehicleEF	LDT1	64.29	63.70
tblVehicleEF	LDT2	384.11	378.07
tblVehicleEF	LDT2	77.68	76.70
tblVehicleEF	MDV	510.84	504.24
tblVehicleEF	MDV	103.50	102.54
tblVehicleTrips	CC_TL	8.40	7.10
tblVehicleTrips	CC_TL	8.40	7.10
tblVehicleTrips	CC_TL	8.40	7.10

tblVehicleTrips	CC_TL	8.40	7.10
tblVehicleTrips	CC_TL	8.40	7.10
tblVehicleTrips	CNW_TL	6.90	7.10
tblVehicleTrips	CNW_TL	6.90	7.10
tblVehicleTrips	CNW_TL	6.90	7.10
tblVehicleTrips	CNW_TL	6.90	7.10
tblVehicleTrips	CNW_TL	6.90	7.10
tblVehicleTrips	CNW_TL	6.90	7.10
tblVehicleTrips	CW_TL	16.60	7.10
tblVehicleTrips	CW_TL	16.60	7.10
tblVehicleTrips	CW_TL	16.60	7.10
tblVehicleTrips	CW_TL	16.60	7.10
tblVehicleTrips	CW_TL	16.60	7.10
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	38.00	0.00
tblVehicleTrips	DV_TP	44.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	HO_TL	8.70	7.85
tblVehicleTrips	HO_TL	8.70	7.85
tblVehicleTrips	HS_TL	5.90	7.85
tblVehicleTrips	HS_TL	5.90	7.85
tblVehicleTrips	HW_TL	14.70	7.85
tblVehicleTrips	HW_TL	14.70	7.85
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00

tblVehicleTrips	PB_TP	12.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	PR_TP	52.00	100.00
tblVehicleTrips	PR_TP	58.00	100.00
tblVehicleTrips	PR_TP	44.00	100.00
tblVehicleTrips	PR_TP	54.00	100.00
tblVehicleTrips	ST_TR	7.16	5.52
tblVehicleTrips	ST_TR	7.16	4.83
tblVehicleTrips	ST_TR	20.87	8.27
tblVehicleTrips	ST_TR	8.19	5.90
tblVehicleTrips	ST_TR	46.55	1.14
tblVehicleTrips	ST_TR	49.97	22.54
tblVehicleTrips	SU_TR	6.07	4.68
tblVehicleTrips	SU_TR	6.07	4.10
tblVehicleTrips	SU_TR	26.73	10.59
tblVehicleTrips	SU_TR	5.95	4.29
tblVehicleTrips	SU_TR	25.49	0.62
tblVehicleTrips	SU_TR	25.24	11.38
tblVehicleTrips	WD_TR	6.59	5.09
tblVehicleTrips	WD_TR	6.59	4.45
tblVehicleTrips	WD_TR	32.93	13.05
tblVehicleTrips	WD_TR	8.17	5.89
tblVehicleTrips	WD_TR	56.24	1.38
tblVehicleTrips	WD_TR	42.94	19.37
tblWater	IndoorWaterUseRate	35,769,560.07	28,021,930.00



**2.2 Overall Operational**

**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	24.4012	24.4012	0.0239	0.0000	24.9036
Energy											0.0000	7,436.8835	7,436.8835	0.2301	0.0641	7,461.5703
Mobile											0.0000	11,018.4809	11,018.4809	0.4214	0.0000	11,027.3312
Waste											192.7359	0.0000	192.7359	11.3904	0.0000	431.9335
Water											27.7571	673.7865	701.5436	2.8732	0.0719	784.1787
<b>Total</b>											<b>220.4930</b>	<b>19,153.5521</b>	<b>19,374.0450</b>	<b>14.9390</b>	<b>0.1360</b>	<b>19,729.9173</b>

**2.2 Overall Operational**

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	24.4012	24.4012	0.0239	0.0000	24.9036
Energy											0.0000	5,618.6087	5,618.6087	0.1700	0.0516	5,638.1744
Mobile											0.0000	11,018.4809	11,018.4809	0.4214	0.0000	11,027.3312
Waste											192.7359	0.0000	192.7359	11.3904	0.0000	431.9335
Water											22.2057	570.6092	592.8149	2.2996	0.0578	659.0120
<b>Total</b>											<b>214.9416</b>	<b>17,232.1001</b>	<b>17,447.0417</b>	<b>14.3053</b>	<b>0.1094</b>	<b>17,781.3547</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>2.52</b>	<b>10.03</b>	<b>9.95</b>	<b>4.24</b>	<b>19.58</b>	<b>9.88</b>

## 2.3 Vegetation

### Vegetation

	CO2e
Category	MT
New Trees	182.6640
Vegetation Land Change	2.8015
<b>Total</b>	<b>185.4655</b>

## 3.0 Construction Detail

### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	No Phase	Trenching	1/1/2015	12/31/2014	5	0	

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)**

### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
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### 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
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### 3.1 Mitigation Measures Construction

### 4.0 Operational Detail - Mobile

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#### 4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	:	:	:	:	:	:	:	:	:	:	0.0000	11,018.4809	11,018.4809	0.4214	0.0000	11,027.3312
Unmitigated	:	:	:	:	:	:	:	:	:	:	0.0000	11,018.4809	11,018.4809	0.4214	0.0000	11,027.3312

#### 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	2,794.41	3,030.48	2569.32	7,989,229	7,989,229
Condo/Townhouse	3,982.75	4,322.85	3669.50	11,391,270	11,391,270
Enclosed Parking with Elevator	0.00	0.00	0.00		
Health Club	102.83	65.17	83.45	244,701	244,701
Hotel	1,225.12	1,227.20	892.32	3,044,098	3,044,098
Library	24.16	19.96	10.86	55,984	55,984
Regional Shopping Center	2,035.01	2,368.05	1195.58	5,072,327	5,072,327
<b>Total</b>	<b>10,164.29</b>	<b>11,033.71</b>	<b>8,421.03</b>	<b>27,797,609</b>	<b>27,797,609</b>

### 4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	7.85	7.85	7.85	40.20	19.20	40.60	100	0	0
Condo/Townhouse	7.85	7.85	7.85	40.20	19.20	40.60	100	0	0
Enclosed Parking with Elevator	7.10	7.10	7.10	0.00	0.00	0.00	100	0	0
Health Club	7.10	7.10	7.10	16.90	64.10	19.00	100	0	0
Hotel	7.10	7.10	7.10	19.40	61.60	19.00	100	0	0
Library	7.10	7.10	7.10	52.00	43.00	5.00	100	0	0
Regional Shopping Center	7.10	7.10	7.10	16.30	64.70	19.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.530094	0.057664	0.178835	0.124843	0.039181	0.006319	0.017052	0.034445	0.002509	0.003148	0.003693	0.000531	0.001685

### 5.0 Energy Detail

#### 5.1 Fleet Mix

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

Install High Efficiency Lighting

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
NaturalGas Mitigated											0.0000	1,144.2747	1,144.2747	0.0219	0.0210	1,151.2385
NaturalGas Unmitigated											0.0000	1,144.2747	1,144.2747	0.0219	0.0210	1,151.2385
Electricity Mitigated											0.0000	4,474.3341	4,474.3341	0.1480	0.0306	4,486.9359
Electricity Unmitigated											0.0000	6,292.6088	6,292.6088	0.2082	0.0431	6,310.3317

### 5.2 Energy by Land Use - NaturalGas

#### Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.03616e+006											0.0000	162.0212	162.0212	3.1100e-003	2.9700e-003	163.0072
Condo/Townhouse	1.22407e+007											0.0000	653.2104	653.2104	0.0125	0.0120	657.1857
Enclosed Parking with Elevator	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	114276											0.0000	6.0982	6.0982	1.2000e-004	1.1000e-004	6.1353
Hotel	5.65736e+006											0.0000	301.8985	301.8985	5.7900e-003	5.5300e-003	303.7358
Library	253930											0.0000	13.5507	13.5507	2.6000e-004	2.5000e-004	13.6331
Regional Shopping Center	140465											0.0000	7.4958	7.4958	1.4000e-004	1.4000e-004	7.5414
<b>Total</b>												<b>0.0000</b>	<b>1,144.2746</b>	<b>1,144.2746</b>	<b>0.0219</b>	<b>0.0210</b>	<b>1,151.2385</b>

### 5.2 Energy by Land Use - NaturalGas

#### Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.03616e+006											0.0000	162.0212	162.0212	3.1100e-003	2.9700e-003	163.0072
Condo/Townhouse	1.22407e+007											0.0000	653.2104	653.2104	0.0125	0.0120	657.1857
Enclosed Parking with Elevator	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	114276											0.0000	6.0982	6.0982	1.2000e-004	1.1000e-004	6.1353
Hotel	5.65736e+006											0.0000	301.8985	301.8985	5.7900e-003	5.5300e-003	303.7358
Library	253930											0.0000	13.5507	13.5507	2.6000e-004	2.5000e-004	13.6331
Regional Shopping Center	140465											0.0000	7.4958	7.4958	1.4000e-004	1.4000e-004	7.5414
<b>Total</b>												<b>0.0000</b>	<b>1,144.2746</b>	<b>1,144.2746</b>	<b>0.0219</b>	<b>0.0210</b>	<b>1,151.2385</b>

### 5.3 Energy by Land Use - Electricity

#### Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.88569e+006	749.8131	0.0248	5.1300e-003	751.9249
Condo/Townhouse	3.84815e+006	1,530.1497	0.0506	0.0105	1,534.4593
Enclosed Parking with Elevator	6.08256e+006	2,418.6265	0.0800	0.0166	2,425.4385
Health Club	88453	35.1718	1.1600e-003	2.4000e-004	35.2709
Hotel	2.28445e+006	908.3716	0.0301	6.2200e-003	910.9300
Library	196550	78.1546	2.5900e-003	5.3000e-004	78.3747
Regional Shopping Center	1.43932e+006	572.3215	0.0189	3.9200e-003	573.9334
<b>Total</b>		<b>6,292.6088</b>	<b>0.2082</b>	<b>0.0431</b>	<b>6,310.3317</b>

### 5.3 Energy by Land Use - Electricity

#### Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.51951e+006	604.2067	0.0200	4.1400e-003	605.9084
Condo/Townhouse	3.04587e+006	1,211.1356	0.0401	8.2900e-003	1,214.5468
Enclosed Parking with Elevator	3.92623e+006	1,561.1965	0.0517	0.0107	1,565.5935
Health Club	67472.5	26.8293	8.9000e-004	1.8000e-004	26.9048
Hotel	1.68057e+006	668.2488	0.0221	4.5700e-003	670.1309
Library	149929	59.6168	1.9700e-003	4.1000e-004	59.7847
Regional Shopping Center	862858	343.1005	0.0114	2.3500e-003	344.0668
<b>Total</b>		<b>4,474.3341</b>	<b>0.1480</b>	<b>0.0306</b>	<b>4,486.9359</b>

### 6.0 Area Detail

#### 6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	24.4012	24.4012	0.0239	0.0000	24.9036
Unmitigated											0.0000	24.4012	24.4012	0.0239	0.0000	24.9036

**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											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	24.4012	24.4012	0.0239	0.0000	24.9036
<b>Total</b>											<b>0.0000</b>	<b>24.4012</b>	<b>24.4012</b>	<b>0.0239</b>	<b>0.0000</b>	<b>24.9036</b>



## 6.2 Area by SubCategory

### Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	24.4012	24.4012	0.0239	0.0000	24.9036
<b>Total</b>											<b>0.0000</b>	<b>24.4012</b>	<b>24.4012</b>	<b>0.0239</b>	<b>0.0000</b>	<b>24.9036</b>

## 7.0 Water Detail

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### 7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	701.5436	2.8732	0.0719	784.1787
Mitigated	592.8149	2.2996	0.0578	659.0120

## 7.2 Water by Land Use

### Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	28.0219 / 17.6658	232.0181	0.9205	0.0231	258.5052
Condo/Townhouse	45.6824 / 28.7995	378.2445	1.5006	0.0376	421.4247
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	0.427933 / 0.262282	3.5101	0.0141	3.5000e-004	3.9145
Hotel	9.83908 / 1.0934	58.8944	0.3225	7.9500e-003	68.1310
Library	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	3.52049 / 2.15769	28.8765	0.1156	2.9000e-003	32.2034
<b>Total</b>		<b>701.5436</b>	<b>2.8732</b>	<b>0.0719</b>	<b>784.1787</b>

## 7.2 Water by Land Use

### Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	22.4175 / 17.6658	197.1944	0.7368	0.0186	218.4167
Condo/Townhouse	36.5459 / 28.7995	321.4736	1.2011	0.0302	356.0710
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	0.342346 / 0.262282	2.9783	0.0113	2.8000e-004	3.3023
Hotel	7.87126 / 1.0934	46.6671	0.2580	6.3600e-003	54.0551
Library	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2.81639 / 2.15769	24.5015	0.0926	2.3300e-003	27.1670
<b>Total</b>		<b>592.8149</b>	<b>2.2996</b>	<b>0.0578</b>	<b>659.0120</b>

## 8.0 Waste Detail

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### 8.1 Mitigation Measures Waste

**Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	192.7359	11.3904	0.0000	431.9335
Unmitigated	192.7359	11.3904	0.0000	431.9335

**8.2 Waste by Land Use****Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	252.54	51.2633	3.0296	0.0000	114.8844
Condo/Townhouse	411.7	83.5714	4.9389	0.0000	187.2889
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Health Club	44.92	9.1184	0.5389	0.0000	20.4348
Hotel	113.88	23.1166	1.3662	0.0000	51.8058
Library	16.13	3.2742	0.1935	0.0000	7.3378
Regional Shopping Center	110.31	22.3919	1.3233	0.0000	50.1818
<b>Total</b>		<b>192.7359</b>	<b>11.3904</b>	<b>0.0000</b>	<b>431.9335</b>

## 8.2 Waste by Land Use

### Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	252.54	51.2633	3.0296	0.0000	114.8844
Condo/Townhouse	411.7	83.5714	4.9389	0.0000	187.2889
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Health Club	44.92	9.1184	0.5389	0.0000	20.4348
Hotel	113.88	23.1166	1.3662	0.0000	51.8058
Library	16.13	3.2742	0.1935	0.0000	7.3378
Regional Shopping Center	110.31	22.3919	1.3233	0.0000	50.1818
<b>Total</b>		<b>192.7359</b>	<b>11.3904</b>	<b>0.0000</b>	<b>431.9335</b>

## 9.0 Operational Offroad

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

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	185.4655	0.0000	0.0000	185.4655

### 10.1 Vegetation Land Change

#### Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Grassland	0 / 0.65	2.8015	0.0000	0.0000	2.8015
<b>Total</b>		<b>2.8015</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.8015</b>

**10.2 Net New Trees**

**Species Class**

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	258	182.6640	0.0000	0.0000	182.6640
<b>Total</b>		<b>182.6640</b>	<b>0.0000</b>	<b>0.0000</b>	<b>182.6640</b>



## **Appendix A.3-2**

### **Operational GHG Emissions Estimates for The Reef Project Re-developed Buildings (2020)**

**SOLA Village - Proposed Project (Re-Developed) Operational GHG (CY 2020)**  
**Los Angeles-South Coast County, Annual**

**1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	180.00	1000sqft	4.13	180,000.00	0
Regional Shopping Center	30.00	1000sqft	0.69	30,000.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	33
<b>Climate Zone</b>	11			<b>Operational Year</b>	2020
<b>Utility Company</b>	Los Angeles Department of Water & Power				
<b>CO2 Intensity (lb/MWhr)</b>	876.63	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics - CO2 intensity factor includes 33% RPS.

Land Use - Re-developed land use for proposed project.

Construction Phase - Construction emissions evaluated separately.

Off-road Equipment -

Vehicle Trips - Trip rates based on traffic study. All trips are 100% primary trips.

Vehicle Emission Factors - Includes reduction for Advanced Clean Cars.

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use - Using Title 24 - 2005 for redeveloped buildings.

Water And Wastewater - Water consumption based on water study.

Energy Mitigation - 75% lighting energy reduction due to LED lighting. Using Energy Star appliances.

Water Mitigation - Based on CalGreen building code, indoor water usage is reduced by 20%.

Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	CO2IntensityFactor	1227.89	876.63
tblProjectCharacteristics	OperationalYear	2014	2020
tblVehicleEF	LDA	257.96	247.65
tblVehicleEF	LDA	53.04	51.45
tblVehicleEF	LDT1	318.76	315.02
tblVehicleEF	LDT1	64.29	63.70
tblVehicleEF	LDT2	384.11	378.07
tblVehicleEF	LDT2	77.68	76.70
tblVehicleEF	MDV	510.84	504.24
tblVehicleEF	MDV	103.50	102.54
tblVehicleTrips	CC_TL	8.40	7.10
tblVehicleTrips	CC_TL	8.40	7.10
tblVehicleTrips	CNW_TL	6.90	7.10
tblVehicleTrips	CNW_TL	6.90	7.10



**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											0.0000	5.2100e-003	5.2100e-003	1.0000e-005	0.0000	5.5100e-003
Energy											0.0000	1,403.5784	1,403.5784	0.0447	0.0110	1,407.9317
Mobile											0.0000	1,757.2806	1,757.2806	0.0675	0.0000	1,758.6977
Waste											40.3749	0.0000	40.3749	2.3861	0.0000	90.4828
Water											2.1799	54.1794	56.3593	0.2257	5.6600e-003	62.8524
<b>Total</b>											<b>42.5548</b>	<b>3,215.0436</b>	<b>3,257.5984</b>	<b>2.7240</b>	<b>0.0167</b>	<b>3,319.9701</b>

## 2.2 Overall Operational

### Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	5.2100e-003	5.2100e-003	1.0000e-005	0.0000	5.5100e-003
Energy											0.0000	1,078.7045	1,078.7045	0.0340	8.7900e-003	1,082.1429
Mobile											0.0000	1,757.2806	1,757.2806	0.0675	0.0000	1,758.6977
Waste											40.3749	0.0000	40.3749	2.3861	0.0000	90.4828
Water											1.7439	46.0765	47.8204	0.1806	4.5400e-003	53.0227
<b>Total</b>											<b>42.1188</b>	<b>2,882.0669</b>	<b>2,924.1857</b>	<b>2.6682</b>	<b>0.0133</b>	<b>2,984.3515</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>1.02</b>	<b>10.36</b>	<b>10.23</b>	<b>2.05</b>	<b>20.04</b>	<b>10.11</b>

## 3.0 Construction Detail

### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	No Phase	Trenching	1/1/2015	12/31/2014	5	0	

Acres of Grading (Site Preparation Phase): 0

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)**

**OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
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**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
No Phase				0.00	14.70	6.90				

**3.1 Mitigation Measures Construction**

**4.0 Operational Detail - Mobile**

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**4.1 Mitigation Measures Mobile**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	1,757.2806	1,757.2806	0.0675	0.0000	1,758.6977
Unmitigated											0.0000	1,757.2806	1,757.2806	0.0675	0.0000	1,758.6977

### 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	1,519.20	327.60	135.00	2,975,235	2,975,235
Regional Shopping Center	581.10	676.20	341.40	1,448,409	1,448,409
<b>Total</b>	<b>2,100.30</b>	<b>1,003.80</b>	<b>476.40</b>	<b>4,423,644</b>	<b>4,423,644</b>

### 4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
General Office Building	7.10	7.10	7.10	33.00	48.00	19.00	100	0	0
Regional Shopping Center	7.10	7.10	7.10	16.30	64.70	19.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.530094	0.057664	0.178835	0.124843	0.039181	0.006319	0.017052	0.034445	0.002509	0.003148	0.003693	0.000531	0.001685

### 5.0 Energy Detail

#### 4.4 Fleet Mix

Historical Energy Use: Y



### 5.1 Mitigation Measures Energy

Install High Efficiency Lighting

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
NaturalGas Mitigated											0.0000	122.4059	122.4059	2.3500e-003	2.2400e-003	123.1509
NaturalGas Unmitigated											0.0000	122.4059	122.4059	2.3500e-003	2.2400e-003	123.1509
Electricity Mitigated											0.0000	956.2986	956.2986	0.0316	6.5500e-003	958.9920
Electricity Unmitigated											0.0000	1,281.1725	1,281.1725	0.0424	8.7700e-003	1,284.7809

### 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					
General Office Building	2.2392e+006											0.0000	119.4922	119.4922	2.2900e-003	2.1900e-003	120.2195
Regional Shopping Center	54600											0.0000	2.9137	2.9137	6.0000e-005	5.0000e-005	2.9314
<b>Total</b>												<b>0.0000</b>	<b>122.4059</b>	<b>122.4059</b>	<b>2.3500e-003</b>	<b>2.2400e-003</b>	<b>123.1509</b>

### 5.2 Energy by Land Use - NaturalGas

#### 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					
General Office Building	2.2392e+006											0.0000	119.4922	119.4922	2.2900e-003	2.1900e-003	120.2195
Regional Shopping Center	54600											0.0000	2.9137	2.9137	6.0000e-005	5.0000e-005	2.9314
<b>Total</b>												<b>0.0000</b>	<b>122.4059</b>	<b>122.4059</b>	<b>2.3500e-003</b>	<b>2.2400e-003</b>	<b>123.1509</b>

### 5.3 Energy by Land Use - Electricity

#### Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	2.7432e+006	1,090.7860	0.0361	7.4700e-003	1,093.8581
Regional Shopping Center	478800	190.3865	6.3000e-003	1.3000e-003	190.9227
<b>Total</b>		<b>1,281.1725</b>	<b>0.0424</b>	<b>8.7700e-003</b>	<b>1,284.7809</b>

### 5.3 Energy by Land Use - Electricity

#### Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	2.10249e+006	836.0187	0.0277	5.7200e-003	838.3734
Regional Shopping Center	302490	120.2799	3.9800e-003	8.2000e-004	120.6187
<b>Total</b>		<b>956.2986</b>	<b>0.0316</b>	<b>6.5400e-003</b>	<b>958.9920</b>

### 6.0 Area Detail

#### 6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	5.2100e-003	5.2100e-003	1.0000e-005	0.0000	5.5100e-003
Unmitigated											0.0000	5.2100e-003	5.2100e-003	1.0000e-005	0.0000	5.5100e-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											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	5.2100e-003	5.2100e-003	1.0000e-005	0.0000	5.5100e-003
<b>Total</b>											<b>0.0000</b>	<b>5.2100e-003</b>	<b>5.2100e-003</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>5.5100e-003</b>

#### 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											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	5.2100e-003	5.2100e-003	1.0000e-005	0.0000	5.5100e-003
<b>Total</b>											<b>0.0000</b>	<b>5.2100e-003</b>	<b>5.2100e-003</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>5.5100e-003</b>

### 7.0 Water Detail

### 7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	56.3593	0.2257	5.6600e-003	62.8524
Mitigated	47.8204	0.1806	4.5400e-003	53.0227

### 7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	5.86572 / 3.59513	48.1133	0.1927	4.8300e-003	53.6565
Regional Shopping Center	1.00531 / 0.616149	8.2460	0.0330	8.3000e-004	9.1960
<b>Total</b>		<b>56.3593</b>	<b>0.2257</b>	<b>5.6600e-003</b>	<b>62.8524</b>

## 7.2 Water by Land Use

### Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	4.69257 / 3.59513	40.8238	0.1542	3.8800e-003	45.2649
Regional Shopping Center	0.804246 / 0.616149	6.9966	0.0264	6.6000e-004	7.7578
<b>Total</b>		<b>47.8204</b>	<b>0.1806</b>	<b>4.5400e-003</b>	<b>53.0227</b>

## 8.0 Waste Detail

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### 8.1 Mitigation Measures Waste

#### Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	40.3749	2.3861	0.0000	90.4828
Unmitigated	40.3749	2.3861	0.0000	90.4828

## 8.2 Waste by Land Use

### Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	167.4	33.9807	2.0082	0.0000	76.1529
Regional Shopping Center	31.5	6.3942	0.3779	0.0000	14.3299
<b>Total</b>		<b>40.3749</b>	<b>2.3861</b>	<b>0.0000</b>	<b>90.4828</b>

### Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	167.4	33.9807	2.0082	0.0000	76.1529
Regional Shopping Center	31.5	6.3942	0.3779	0.0000	14.3299
<b>Total</b>		<b>40.3749</b>	<b>2.3861</b>	<b>0.0000</b>	<b>90.4828</b>

## 9.0 Operational Offroad

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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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## **10.0 Vegetation**

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