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# **Altitude Business Center**

## **GREENHOUSE GAS ANALYSIS**

### **CITY OF CHINO**

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## **LIST OF ABBREVIATED TERMS**

(1)	Reference
ARB	California Air Resources Board
AQIA	Air Quality Impact Analysis
CAA	Federal Clean Air Act
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resource Board
CAT	Climate Action Team
CBSC	California Building Standards Commission
CEC	California Energy Commission
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFC	Chlorofluorocarbons
CFR	Code of Federal Regulations
CH <sub>4</sub>	Methane
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide Equivalent
CPUC	California Public Utilities Commission
EPA	Environmental Protection Agency
EPS	Emission Performance Standard
GCC	Global Climate Change
GHGA	Greenhouse Gas Analysis
GWP	Global Warming Potential
HFC	Hydrofluorocarbons
LCA	Life-Cycle Analysis
MMs	Mitigation Measures
MMTCO <sub>2</sub> e	Million Metric Ton of Carbon Dioxide Equivalent
MTCO <sub>2</sub> e	Metric Ton of Carbon Dioxide Equivalent
N <sub>2</sub> O	Nitrogen Dioxide
NIOSH	National Institute for Occupational Safety and Health
NO <sub>x</sub>	Oxides of Nitrogen
PFC	Perfluorocarbons
PM <sub>10</sub>	Particulate Matter 10 microns in diameter or less
PM <sub>2.5</sub>	Particulate Matter 2.5 microns in diameter or less

PPM	Parts Per Million
Project	Altitude Business Center
RTP	Regional Transportation Plan
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
UNFCCC	United Nations' Framework Convention on Climate Change
VOC	Volatile Organic Compounds

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## EXECUTIVE SUMMARY

***GHG Impact #1: The Project would generate direct or indirect greenhouse gas emission that would result in a significant impact on the environment.***

The City adopted The Chino Climate Action Plan and Plan Implementing Measures, effective in full force as of January 2, 2014 (collectively, the CAP). Under the CAP, the City of Chino selected a goal to reduce its community GHG emissions to a level that is 15 percent below its 2008 GHG emissions levels by 2020 which is generally consistent with AB 32 and recommended in the AB 32 Scoping Plan. In order to fulfill this commitment, GHG emissions-reducing development and performance standards have been established under the Chino CAP as codified at Chino Municipal Code Chapter 15.45 – Climate Action Plan Implementation.

The Project would comply with applicable provisions of Chino Municipal Code Chapter 15.45 – Climate Action Plan Implementation. More specifically, development within the Project site would be required to conform to “Option 1” of Chino Municipal Code Chapter 15.45 which states: “Exceed by 3% the mandatory California Energy Code Title 24, Part 6 standards, in effect at the time of development application submittal for discretionary review.” It should be noted in fact that the Project as part of its design will exceed the mandatory Title 24 requirements by 3% which meets the 3% target reduction established by the City of Chino.

Furthermore, the Project will result in approximately 3,516.92 MTCO<sub>2</sub>e per year from construction, area, energy, waste, water usage, and on-site equipment. In addition, the Project has the potential to result in an additional 39,310.68 MTCO<sub>2</sub>e per year from mobile sources if the assumption is made that all of the vehicle trips to and from the Project are “new” trips resulting from the development of the Project. As such, the Project has the potential to generate a total of approximately 42,827.60 MTCO<sub>2</sub>e per year. Notwithstanding, an individual project cannot generate enough GHG emissions to influence global climate change. The project participates in this potential impact by its incremental contribution combined with the cumulative increase of all other sources of GHGs, which when taken together may have a significant impact on global climate change. Because the City’s CAP addresses GHG emissions reduction, is in concert with AB 32 and international efforts to address global climate change, and includes specific local requirements that will substantially lessen the cumulative problem, compliance with the CAP fulfills the description of mitigation found in *CEQA Guidelines* §15130(a)(3) and §15183.5.

As substantiated herein, the proposed Project would be consistent with the CAP, would be in concert with AB 32 and international efforts to address global climate change, and would reflect specific local requirements that would substantially lessen cumulative GHG emissions impacts. The proposed Project would therefore also fulfill the description of mitigation found in *CEQA Guidelines* §15130(a)(3) and §15183.5. The Project’s incremental contribution to GHG emissions impacts would therefore not be cumulatively considerable.

**TABLE ES-1: PROJECT GREENHOUSE GAS EMISSIONS (ANNUAL)**

Emission Source	Emissions (metric tons per year)			
	CO2	CH4	N2O	Total CO2E
Annual construction-related emissions amortized over 30 years	82.04	0.02	0.00	82.47
Area	0.03	0.00	0.00	0.03
Energy from Building Envelope	2,559.04	0.09	0.03	2,569.78
Energy from On-Site Equipment	121.01	0.04	0.00	121.99
Mobile (Trucks)	30,541.68	0.96	0.00	30,565.56
Mobile (Passenger Cars)	8,740.67	0.18	0.00	8,745.11
Waste	265.59	15.70	0.00	657.99
Water Usage	70.06	0.45	0.01	84.65
<b>Total CO<sub>2</sub>E (All Sources)</b>	<b>42,827.60</b>			

***GHG Impact #2: The Project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.***

The Project would be consistent with and would not conflict with implementation of the goals and objectives established by Assembly Bill 32 (AB 32) and Senate Bill 32 (SB 32) (or targets established by Executive Orders S-3-05 and B-30-15) as evaluated in Section 3.7 of this report. As such, the Project would result in a less than significant impact with respect to this threshold.

# 1 INTRODUCTION

This report presents the results of the greenhouse gas analysis (GHGA) prepared by Urban Crossroads, Inc., for the proposed Altitude Business Center Center (“Project”). The purpose of this GHGA is to evaluate Project-related construction and operational emissions and determine the level of greenhouse gas (GHG) impacts as a result of constructing and operating the proposed Project.

## 1.1 SITE LOCATION

The proposed Altitude Business Center site is located between Kimball Avenue and Bickmore Avenue on either side of the future Mayhew Avenue, in the City of Chino, as shown on Exhibit 1-A. State Route 71 (SR-71) Freeway is located approximately two miles west of the Project site.

## 1.2 PROJECT DESCRIPTION

Exhibit 1-B illustrates the preliminary Project site plan. As indicated, the total development is proposed to consist of up to 1,313,000 sf of business center use, specifically with the following uses:

- 715,000 sf of warehousing use within 4 buildings (Buildings 3, 4, 5, and 6). Warehouse use has been utilized for a portion of the buildings that are proposed to include dock doors.
- 255,000 sf of general light industrial use within 3 buildings (Buildings 1, 2, N, and O). General Light Industrial use has been utilized for remaining buildings that are proposed to include dock doors.
- 233,000 sf of business park use within 14 buildings (Buildings 7A, 7B, 8, 9, and A through L). The business park land use has been utilized for all the remaining smaller buildings without dock doors.
- 110,000 sf of self-storage use within 1 building (Building 2).

The Project is planned to be completed in 3 phases, as illustrated in Exhibit 1-1:

- Phase 1 (2018): Buildings 4, 5, and 6 – 515,000 sf Warehouse use
- Phase 2 (2019): Buildings 1, 2, and 3 – 194,000 sf of General Light Industrial use and 200,000 sf Warehouse use
- Phase 3 (2020): Buildings M, N, O, 7A, 7B, 8, 9, and A through L – 61,000 sf General Light Industrial use, 233,000 sf Business Park use, and 110,000 sf of Self-Storage use

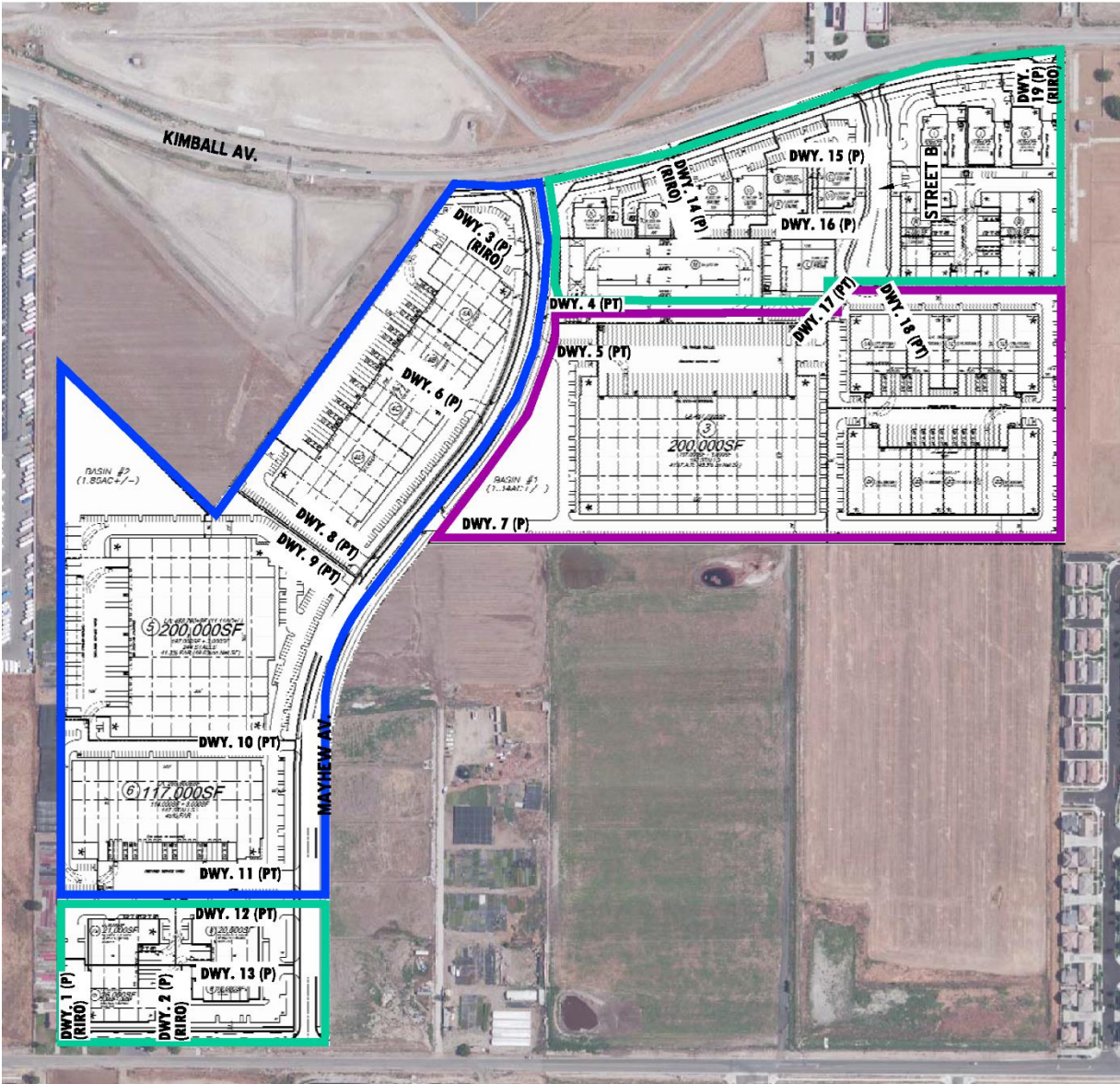
As part of the Project’s design, all on-site outdoor cargo handling equipment (CHE) (including yard trucks, hostlers, yard goats, pallet jacks, forklifts, and other on-site equipment) will be powered by electric or non-diesel engines.

EXHIBIT 1-A: LOCATION MAP





EXHIBIT 1-B: SITE PLAN



LEGEND:

- |      |                                  |   |                  |
|------|----------------------------------|---|------------------|
| RIRO | ▪ RIGHT-IN/RIGHT-OUT ONLY ACCESS | ■ | ▪ PHASE 1 (2018) |
| P    | ▪ PASSENGER CARS ONLY            | ■ | ▪ PHASE 2 (2019) |
| T    | ▪ TRUCKS ONLY                    | ■ | ▪ PHASE 3 (2020) |
| PT   | ▪ PASSENGER CARS AND TRUCKS      |   |                  |

NOTE: UNLESS NOTED, ALL DRIVEWAYS ARE ASSUMED TO BE FULL ACCESS.



### 1.3 REGULATORY REQUIREMENTS

The Project would be required to comply with all mandates imposed by the State of California and the South Coast Air Quality Management District aimed at the reduction of air quality emissions. Those that are applicable to the Project and that would assist in the reduction of greenhouse gas emissions are:

- Global Warming Solutions Act of 2006 (AB32) (1)
- Regional GHG Emissions Reduction Targets/Sustainable Communities Strategies (SB 375) (2)
- Pavley Fuel Efficiency Standards (AB1493). Establishes fuel efficiency ratings for new vehicles (3).
- Title 24 California Code of Regulations (California Building Code). Establishes energy efficiency requirements for new construction (4).
- Title 20 California Code of Regulations (Appliance Energy Efficiency Standards). Establishes energy efficiency requirements for appliances (5).
- Title 17 California Code of Regulations (Low Carbon Fuel Standard). Requires carbon content of fuel sold in California to be 10% less by 2020 (6).
- California Water Conservation in Landscaping Act of 2006 (AB1881). Requires local agencies to adopt the Department of Water Resources updated Water Efficient Landscape Ordinance or equivalent by January 1, 2010 to ensure efficient landscapes in new development and reduced water waste in existing landscapes (7).
- Statewide Retail Provider Emissions Performance Standards (SB 1368). Requires energy generators to achieve performance standards for GHG emissions (8).
- Renewable Portfolio Standards (SB 1078). Requires electric corporations to increase the amount of energy obtained from eligible renewable energy resources to 20 percent by 2010 and 33 percent by 2020 (9).

Promulgated regulations that will affect the Project's emissions are accounted for in the Project's GHG calculations provided in this report. In particular, the Pavley Standards, Low Carbon Fuel Standards, and Renewable Portfolio Standards (RPS) will be in effect for the AB 32 target year of 2020, and therefore are accounted for in the Project's emission calculations.

### 1.4 MITIGATION MEASURES

#### **MM GHG-1**

*Mandatory Compliance with Municipal Code Chapter 15.45:* In order to reduce air pollutant emissions, inclusive of greenhouse gas (GHG) emissions, and promote sustainability through conservation of energy and other natural resources, the Project shall comply with applicable provisions of Chino Municipal Code Chapter 15.45 – Climate Action Plan Implementation. Development proposals within the Project site shall conform to Climate Action Plan Implementation Section 15.45.070 Option 1– “Exceed by 3% the mandatory California Energy Code Title 24, Part 6 standards, in effect at the time of development application submittal for discretionary review.”

Verification of increased energy efficiencies shall be documented in Title 24 Compliance Reports provided by the Applicant and reviewed and approved by the City prior to the issuance of building permits.

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## 2 CLIMATE CHANGE SETTING

### 2.1 INTRODUCTION TO GLOBAL CLIMATE CHANGE

Global Climate Change (GCC) is defined as the change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms. GCC is currently one of the most controversial environmental issues in the United States, and much debate exists within the scientific community about whether or not GCC is occurring naturally or as a result of human activity. Some data suggests that GCC has occurred in the past over the course of thousands or millions of years. These historical changes to the earth's climate have occurred naturally without human influence, as in the case of an ice age. However, many scientists believe that the climate shift taking place since the industrial revolution (1900) is occurring at a quicker rate and magnitude than in the past. Scientific evidence suggests that GCC is the result of increased concentrations of greenhouse gases in the earth's atmosphere, including carbon dioxide, methane, nitrous oxide, and fluorinated gases. Many scientists believe that this increased rate of climate change is the result of greenhouse gases resulting from human activity and industrialization over the past 200 years.

An individual project like the proposed Project evaluated in this GHGA cannot generate enough greenhouse gas emissions to affect a discernible change in global climate. However, the proposed Project may participate in the potential for GCC by its incremental contribution of greenhouse gases combined with the cumulative increase of all other sources of greenhouse gases, which when taken together constitute potential influences on GCC. Because these changes may have serious environmental consequences, Section 3.0 will evaluate the potential for the proposed Project to have a significant effect upon the environment as a result of its potential contribution to the greenhouse effect.

### 2.2 GREENHOUSE GAS EMISSIONS INVENTORIES

#### *Global*

Worldwide anthropogenic (human) GHG emissions are tracked by the Intergovernmental Panel on Climate Change for industrialized nations (referred to as Annex I) and developing nations (referred to as Non-Annex I). Human GHG emissions data for Annex I nations are available through 2015. For the Year 2015, the sum of these emissions totaled approximately 28,872,564 Gg CO<sub>2</sub>e<sup>1</sup> (10) (11). The GHG emissions in more recent years may differ from the inventories presented in Table 2-1; however, the data is representative of currently available inventory data.

1 The global emissions are the sum of Annex I and non-Annex I countries, without counting Land-Use, Land-Use Change and Forestry (LULUCF). For countries without 2005 data, the UNFCCC data for the most recent year were used. United Nations Framework Convention on Climate Change, "Annex I Parties – GHG total without LULUCF,"

### United States

As noted in Table 2-1, the United States, as a single country, was the number two producer of GHG emissions in 2015. The primary greenhouse gas emitted by human activities in the United States was CO<sub>2</sub>, representing approximately 83 percent of total greenhouse gas emissions (12). Carbon dioxide from fossil fuel combustion, the largest source of US greenhouse gas emissions, accounted for approximately 78 percent of the GHG emissions.

**TABLE 2-1: TOP GHG PRODUCER COUNTRIES AND THE EUROPEAN UNION <sup>2</sup>**

<b>Emitting Countries</b>	<b>GHG Emissions (Gg CO<sub>2</sub>e)</b>
China	11,895,765
United States	6,586,655
European Union (28 member countries)	4,315,773
India	2,650,954
Russian Federation	2,100,849
Japan	1,322,568
<b>Total</b>	<b>28,872,564</b>

### State of California

CARB compiles GHG inventories for the State of California. Based upon the 2017 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2015 greenhouse gas emissions inventory, California emitted 440.4 MMTCO<sub>2</sub>e including emissions resulting from imported electrical power in 2015 (13). Based on the CARB inventory data and GHG inventories compiled by the World Resources Institute, California's total statewide GHG emissions rank second in the United States (Texas is number one) with emissions of 417 MMTCO<sub>2</sub>e excluding emissions related to imported power (14).

## 2.3 GLOBAL CLIMATE CHANGE DEFINED

GCC refers to the change in average meteorological conditions on the earth with respect to temperature, wind patterns, precipitation and storms. Global temperatures are regulated by naturally occurring atmospheric gases such as water vapor, CO<sub>2</sub> (carbon dioxide), N<sub>2</sub>O (nitrous oxide), CH<sub>4</sub> (methane), hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. These particular gases are important due to their residence time (duration they stay) in the atmosphere, which ranges from 10 years to more than 100 years. These gases allow solar radiation into the earth's atmosphere, but prevent radioactive heat from escaping, thus warming the earth's atmosphere. GCC can occur naturally as it has in the past with the previous ice ages.

Gases that trap heat in the atmosphere are often referred to as greenhouse gases. Greenhouse gases are released into the atmosphere by both natural and anthropogenic (human) activity.

<sup>2</sup> Used <http://unfccc.int> data for Annex I countries. Consulted the CAIT Climate Data Explorer in <http://www.wri.org> site to reference Non-Annex I countries such as China and India.

Without the natural greenhouse gas effect, the earth's average temperature would be approximately 61° Fahrenheit (F) cooler than it is currently. The cumulative accumulation of these gases in the earth's atmosphere is considered to be the cause for the observed increase in the earth's temperature.

Although California's rate of growth of greenhouse gas emissions is slowing, the state is still a substantial contributor to the U.S. emissions inventory total. In 2004, California is estimated to have produced 492 million gross metric tons of CO<sub>2</sub>e greenhouse gas emissions. Despite a population increase of 16 percent between 1990 and 2004, California has significantly slowed the rate of growth of greenhouse gas emissions due to the implementation of energy efficiency programs as well as adoption of strict emission controls (15).

## 2.4 GREENHOUSE GASES

For the purposes of this analysis, emissions of carbon dioxide, methane, and nitrous oxide were evaluated (see Table 3-4 later in this report) because these gasses are the primary contributors to GCC from development projects. Although there are other substances such as fluorinated gases that also contribute to GCC, these fluorinated gases were not evaluated as their sources are not well-defined and do not contain accepted emissions factors or methodology to accurately calculate these gases.

Water Vapor: Water vapor (H<sub>2</sub>O) is the most abundant, important, and variable greenhouse gas in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered to be a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. A climate feedback is an indirect, or secondary, change, either positive or negative, that occurs within the climate system in response to a forcing mechanism. The feedback loop in which water is involved is critically important to projecting future climate change.

As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to 'hold' more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop." The extent to which this positive feedback loop will continue is unknown as there are also dynamics that hold the positive feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it will eventually also condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the earth's surface and heat it up).

There are no human health effects from water vapor itself; however, when some pollutants come in contact with water vapor, they can dissolve and the water vapor can then act as a pollutant-carrying agent. The main source of water vapor is evaporation from the oceans (approximately 85 percent). Other sources include: evaporation from other water bodies,

sublimation (change from solid to gas) from sea ice and snow, and transpiration from plant leaves.

Carbon Dioxide: Carbon dioxide ( $\text{CO}_2$ ) is an odorless and colorless GHG. Outdoor levels of carbon dioxide are not high enough to result in negative health effects. Carbon dioxide is emitted from natural and manmade sources. Natural sources include: the decomposition of dead organic matter; respiration of bacteria, plants, animals and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources include: the burning of coal, oil, natural gas, and wood. Carbon dioxide is naturally removed from the air by photosynthesis, dissolution into ocean water, transfer to soils and ice caps, and chemical weathering of carbonate rocks (16).

Since the industrial revolution began in the mid-1700s, the sort of human activity that increases GHG emissions has increased dramatically in scale and distribution. Data from the past 50 years suggests a corollary increase in levels and concentrations. As an example, prior to the industrial revolution,  $\text{CO}_2$  concentrations were fairly stable at 280 parts per million (ppm). Today, they are around 370 ppm, an increase of more than 30 percent. Left unchecked, the concentration of carbon dioxide in the atmosphere is projected to increase to a minimum of 540 ppm by 2100 as a direct result of anthropogenic sources (17).

Methane: Methane ( $\text{CH}_4$ ) is an extremely effective absorber of radiation, though its atmospheric concentration is less than carbon dioxide and its lifetime in the atmosphere is brief (10-12 years), compared to other GHGs. No health effects are known to occur from exposure to methane.

Methane has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of methane. Other anthropocentric sources include fossil-fuel combustion and biomass burning.

Nitrous Oxide: Nitrous oxide ( $\text{N}_2\text{O}$ ), also known as laughing gas, is a colorless greenhouse gas. Nitrous oxide can cause dizziness, euphoria, and sometimes slight hallucinations. In small doses, it is considered harmless. However, in some cases, heavy and extended use can cause Olney's Lesions (brain damage) (18).

Concentrations of nitrous oxide also began to rise at the beginning of the industrial revolution. In 1998, the global concentration was 314 parts per billion (ppb). Nitrous oxide is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used as an aerosol spray propellant, i.e., in whipped cream bottles. It is also used in potato chip bags to keep chips fresh. It is used in rocket engines and in race cars. Nitrous oxide can be transported into the stratosphere, be deposited on the earth's surface, and be converted to other compounds by chemical reaction

Chlorofluorocarbons: Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in methane or ethane ( $C_2H_6$ ) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble and chemically unreactive in the troposphere (the level of air at the earth's surface). CFCs are no longer being used; therefore, it is not likely that health effects would be experienced. Nonetheless, in confined indoor locations, working with CFC-113 or other CFCs is thought to result in death by cardiac arrhythmia (heart frequency too high or too low) or asphyxiation.

CFCs have no natural source, but were first synthesized in 1928. They were used for refrigerants, aerosol propellants and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and was extremely successful, so much so that levels of the major CFCs are now remaining steady or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.

Hydrofluorocarbons: Hydrofluorocarbons (HFCs) are synthetic, man-made chemicals that are used as a substitute for CFCs. Out of all the greenhouse gases, they are one of three groups with the highest global warming potential. The HFCs with the largest measured atmospheric abundances are (in order), HFC-23 ( $CHF_3$ ), HFC-134a ( $CF_3CH_2F$ ), and HFC-152a ( $CH_3CHF_2$ ). Prior to 1990, the only significant emissions were of HFC-23. HFC-134a emissions are increasing due to its use as a refrigerant. The U.S. EPA estimates that concentrations of HFC-23 and HFC-134a are now about 10 parts per trillion (ppt) each; and that concentrations of HFC-152a are about 1 ppt (19). No health effects are known to result from exposure to HFCs, which are manmade for applications such as automobile air conditioners and refrigerants.

Perfluorocarbons: Perfluorocarbons (PFCs) have stable molecular structures and do not break down through chemical processes in the lower atmosphere. High-energy ultraviolet rays, which occur about 60 kilometers above earth's surface, are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane ( $CF_4$ ) and hexafluoroethane ( $C_2F_6$ ). The U.S. EPA estimates that concentrations of  $CF_4$  in the atmosphere are over 70 ppt.

No health effects are known to result from exposure to PFCs. The two main sources of PFCs are primary aluminum production and semiconductor manufacture.

Sulfur Hexafluoride: Sulfur hexafluoride ( $SF_6$ ) is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It also has the highest global warming potential (GWP) of any gas evaluated (23,900). The U.S. EPA indicates that concentrations in the 1990s were about 4 ppt. In high concentrations in confined areas, the gas presents the hazard of suffocation because it displaces the oxygen needed for breathing.

Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

Greenhouse gases have varying GWP values; GWP values represent the potential of a gas to trap heat in the atmosphere. Carbon dioxide is utilized as the reference gas for GWP, and thus has a GWP of 1.

The atmospheric lifetime and GWP of selected greenhouse gases are summarized at Table 2-2. As shown in the table below, GWP for the Second Assessment Report (SAR), the Intergovernmental Panel on Climate Change (IPCC)'s scientific and socio-economic assessment on climate change, range from 1 for carbon dioxide to 23,900 for sulfur hexafluoride and GWP for the IPCC's 4<sup>th</sup> Assessment Report (AR4) range from 1 for carbon dioxide to 22,800 for sulfur hexafluoride.

**TABLE 2-2: GLOBAL WARMING POTENTIAL AND ATMOSPHERIC LIFETIME OF SELECT GHGS**

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)	
		Second Assessment Report (SAR)	4 <sup>th</sup> Assessment Report (AR4)
Carbon Dioxide	50-200	1	1
Methane	12 ± 3	21	25
Nitrous Oxide	120	310	298
HFC-23	264	11,700	14,800
HFC-134a	14.6	1,300	1,430
HFC-152a	1.5	140	124
Sulfur Hexafluoride (SF <sub>6</sub> )	3,200	23,900	22,800

Source: Table 2.14 of the IPCC Fourth Assessment Report, 2007

## 2.5 EFFECTS OF CLIMATE CHANGE IN CALIFORNIA

### *Public Health*

Higher temperatures may increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation could increase from 25 to 35 percent under the lower warming range (3-5.5°F) to 75 to 85 percent under the medium warming range (5.5-8°F). In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances, depending on wind conditions. The Climate Scenarios report indicates that large wildfires could become up to 55 percent more frequent if GHG emissions are not significantly reduced.

In addition, under the higher warming range scenario (8-10.5°F), there could be up to 100 more days per year with temperatures above 90°F in Los Angeles and 95°F in Sacramento by 2100. This is a large increase over historical patterns and approximately twice the increase projected

if temperatures remain within or below the lower warming range. Rising temperatures could increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

### *Water Resources*

A vast network of man-made reservoirs and aqueducts captures and transports water throughout the state from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages.

If temperatures continue to increase, more precipitation could fall as rain instead of snow, and the snow that does fall could melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. Under the lower warming range scenario, snowpack losses could be only half as large as those possible if temperatures were to rise to the higher warming range. How much snowpack could be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snowpack could pose challenges to water managers and hamper hydropower generation. It could also adversely affect winter tourism. Under the lower warming range, the ski season at lower elevations could be reduced by as much as a month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing and snowboarding.

The State's water supplies are also at risk from rising sea levels. An influx of saltwater could degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta – a major fresh water supply.

### *Agriculture*

Increased temperatures could cause widespread changes to the agriculture industry reducing the quantity and quality of agricultural products statewide. First, California farmers could possibly lose as much as 25 percent of the water supply they need. Although higher CO<sub>2</sub> levels can stimulate plant production and increase plant water-use efficiency, California's farmers could face greater water demand for crops and a less reliable water supply as temperatures rise. Crop growth and development could change, as could the intensity and frequency of pest and disease outbreaks. Rising temperatures could aggravate O<sub>3</sub> pollution, which makes plants more susceptible to disease and pests and interferes with plant growth.

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than-optimal development for many crops, so rising temperatures could worsen the quantity and quality of yield for a number of California's agricultural products. Products likely to be most affected include wine grapes, fruits and nuts.

In addition, continued global climate change could shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion could occur in many species while range contractions may be less likely in rapidly evolving species with significant populations already established. Should range contractions occur, new or different weed species could fill the emerging gaps. Continued global climate change could alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates.

### *Forests and Landscapes*

Global climate change has the potential to intensify the current threat to forests and landscapes by increasing the risk of wildfire and altering the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55 percent, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the state. In contrast, wildfires in northern California could increase by up to 90 percent due to decreased precipitation.

Moreover, continued global climate change has the potential to alter natural ecosystems and biological diversity within the state. For example, alpine and subalpine ecosystems could decline by as much as 60 to 80 percent by the end of the century as a result of increasing temperatures. The productivity of the state's forests has the potential to decrease as a result of global climate change.

### *Rising Sea Levels*

Rising sea levels, more intense coastal storms, and warmer water temperatures could increasingly threaten the state's coastal regions. Under the higher warming range scenario, sea level is anticipated to rise 22 to 35 inches by 2100. Elevations of this magnitude would inundate low-lying coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats. Under the lower warming range scenario, sea level could rise 12-14 inches.

## **2.6 HUMAN HEALTH EFFECTS**

The potential health effects related directly to the emissions of carbon dioxide, methane, and nitrous oxide as they relate to development projects such as the proposed Project are still being debated in the scientific community. Their cumulative effects to global climate change have the potential to cause adverse effects to human health. Increases in Earth's ambient temperatures would result in more intense heat waves, causing more heat-related deaths. Scientists also purport that higher ambient temperatures would increase disease survival rates and result in more widespread disease. Climate change will likely cause shifts in weather patterns, potentially resulting in devastating droughts and food shortages in some areas (20). Exhibit 2-A presents the potential impacts of global warming.



Specific health effects associated with directly emitted GHG emissions are as follows:

Water Vapor: There are no known direct health effects related to water vapor at this time. It should be noted however that when some pollutants react with water vapor, the reaction forms a transport mechanism for some of these pollutants to enter the human body through water vapor.

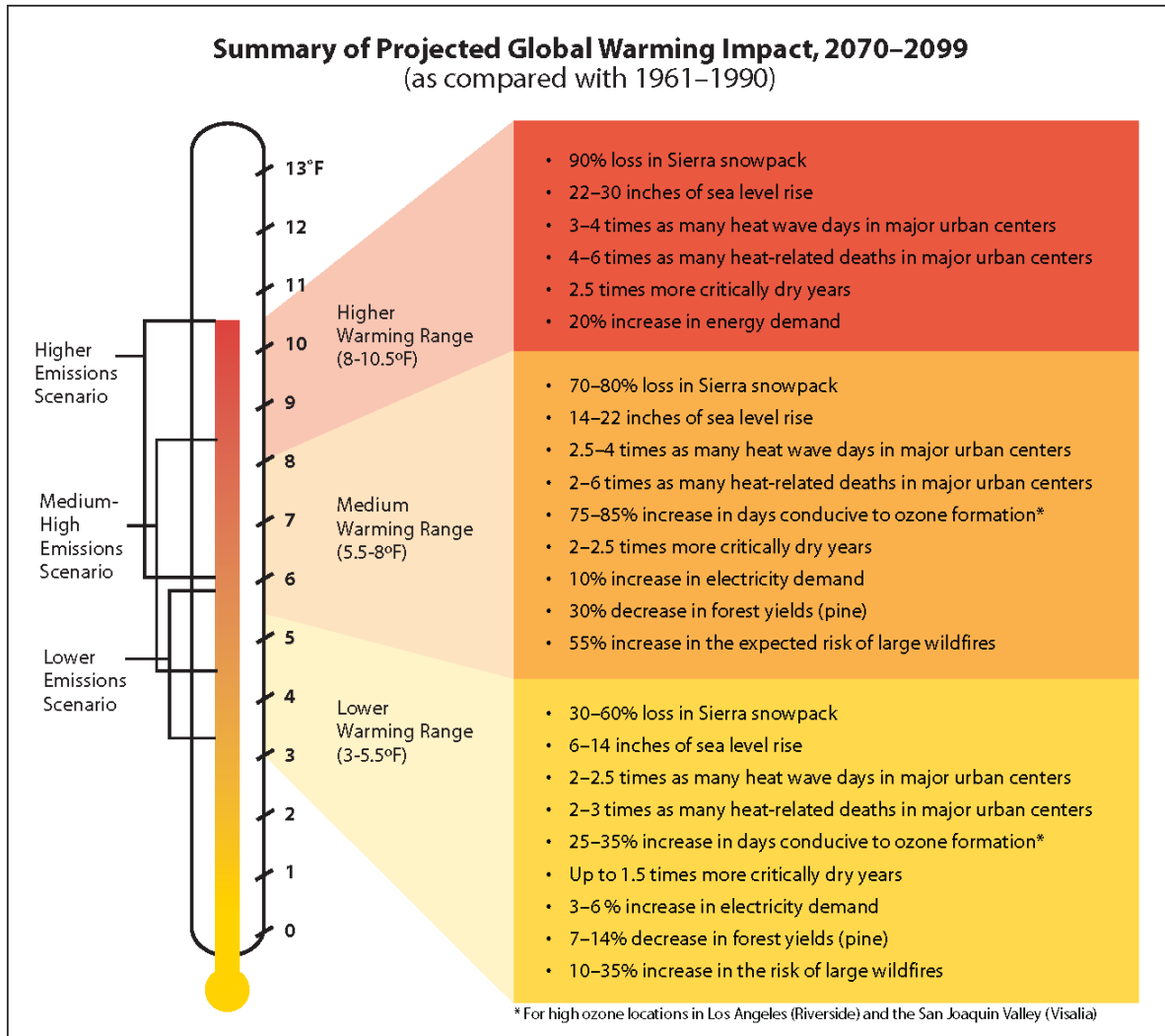
Carbon Dioxide: According to the National Institute for Occupational Safety and Health (NIOSH) high concentrations of carbon dioxide can result in health effects such as: headaches, dizziness, restlessness, difficulty breathing, sweating, increased heart rate, increased cardiac output, increased blood pressure, coma, asphyxia, and/or convulsions. It should be noted that current concentrations of carbon dioxide in the earth's atmosphere are estimated to be approximately 370 parts per million (ppm), the actual reference exposure level (level at which adverse health effects typically occur) is at exposure levels of 5,000 ppm averaged over 10 hours in a 40-hour workweek and short-term reference exposure levels of 30,000 ppm averaged over a 15 minute period (21).

Methane: Methane is extremely reactive with oxidizers, halogens, and other halogen-containing compounds. Methane is also an asphyxiant and may displace oxygen in an enclosed space (22).

Nitrous Oxide: Nitrous Oxide is often referred to as laughing gas; it is a colorless greenhouse gas. The health effects associated with exposure to elevated concentrations of nitrous oxide include dizziness, euphoria, slight hallucinations, and in extreme cases of elevated concentrations nitrous oxide can also cause brain damage (22).

Fluorinated Gases: High concentrations of fluorinated gases can also result in adverse health effects such as asphyxiation, dizziness, headache, cardiovascular disease, cardiac disorders, and in extreme cases, increased mortality (21).

Aerosols: The health effects of aerosols are similar to that of other fine particulate matter. Thus aerosols can cause elevated respiratory and cardiovascular diseases as well as increased mortality (23).

**EXHIBIT 2-A: SUMMARY OF PROJECTED GLOBAL WARMING IMPACT****2.7 REGULATORY SETTING****INTERNATIONAL**

Climate change is a global issue involving GHG emissions from all around the world; therefore, countries such as the ones discussed below have made an effort to reduce GHGs.

**Intergovernmental Panel on Climate Change.** In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change to assess the scientific, technical and socioeconomic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation.

**United Nations Framework Convention on Climate Change (Convention).** On March 21, 1994, the U.S. joined a number of countries around the world in signing the Convention. Under the

Convention, governments gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

**International Climate Change Treaties.** The Kyoto Protocol is an international agreement linked to the Convention. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions at an average of five percent against 1990 levels over the five-year period 2008–2012. The Convention (as discussed above) encouraged industrialized countries to stabilize emissions; however, the Protocol commits them to do so. Developed countries have contributed more emissions over the last 150 years; therefore, the Protocol places a heavier burden on developed nations under the principle of “common but differentiated responsibilities.”

In 2001, President George W. Bush indicated that he would not submit the treaty to the U.S. Senate for ratification, which effectively ended American involvement in the Kyoto Protocol. In December 2009, international leaders met in Copenhagen to address the future of international climate change commitments post-Kyoto. No binding agreement was reached in Copenhagen; however, the Committee identified the long-term goal of limiting the maximum global average temperature increase to no more than 2°C above pre-industrial levels, subject to a review in 2015. The UN Climate Change Committee held additional meetings in Durban, South Africa in November 2011; Doha, Qatar in November 2012; and Warsaw, Poland in November 2013. The meetings are gradually gaining consensus among participants on individual climate change issues.

On September 23, 2014 more than 100 Heads of State and Government and leaders from the private sector and civil society met at the Climate Summit in New York hosted by the United Nations. At the Summit, heads of government, business and civil society announced actions in areas that would have the greatest impact on reducing emissions, including climate finance, energy, transport, industry, agriculture, cities, forests, and building resilience.

Parties to the U.N. Framework Convention on Climate Change (UNFCCC) reached a landmark agreement on December 12, 2015 in Paris, charting a fundamentally new course in the two-decade-old global climate effort. Culminating a four-year negotiating round, the new treaty ends the strict differentiation between developed and developing countries that characterized earlier efforts, replacing it with a common framework that commits all countries to put forward their best efforts and to strengthen them in the years ahead. This includes, for the first time, requirements that all parties report regularly on their emissions and implementation efforts, and undergo international review.

The agreement and a companion decision by parties were the key outcomes of the conference, known as the 21st session of the UNFCCC Conference of the Parties, or COP 21. Together, the Paris Agreement and the accompanying COP decision:

- Reaffirm the goal of limiting global temperature increase well below 2 degrees Celsius, while urging efforts to limit the increase to 1.5 degrees;

- Establish binding commitments by all parties to make “nationally determined contributions” (NDCs), and to pursue domestic measures aimed at achieving them;
- Commit all countries to report regularly on their emissions and “progress made in implementing and achieving” their NDCs, and to undergo international review;
- Commit all countries to submit new NDCs every five years, with the clear expectation that they will “represent a progression” beyond previous ones;
- Reaffirm the binding obligations of developed countries under the UNFCCC to support the efforts of developing countries, while for the first time encouraging voluntary contributions by developing countries too;
- Extend the current goal of mobilizing \$100 billion a year in support by 2020 through 2025, with a new, higher goal to be set for the period after 2025;
- Extend a mechanism to address “loss and damage” resulting from climate change, which explicitly will not “involve or provide a basis for any liability or compensation;”
- Require parties engaging in international emissions trading to avoid “double counting;” and
- Call for a new mechanism, similar to the Clean Development Mechanism under the Kyoto Protocol, enabling emission reductions in one country to be counted toward another country’s NDC (C2ES 2015a) (24).

## NATIONAL

Prior to the last decade, there have been no concrete federal regulations of GHGs or major planning for climate change adaptation. The following are actions regarding the federal government, GHGs, and fuel efficiency.

**GHG Endangerment.** In *Massachusetts v. Environmental Protection Agency* 549 U.S. 497 (2007), decided on April 2, 2007, the Supreme Court found that four GHGs, including carbon dioxide, are air pollutants subject to regulation under Section 202(a)(1) of the Clean Air Act. The Court held that the EPA Administrator must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the Clean Air Act:

- **Endangerment Finding:** The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs—carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The Administrator finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution, which threatens public health and welfare.

These findings do not impose requirements on industry or other entities. However, this was a prerequisite for implementing GHG emissions standards for vehicles, as discussed in the section “Clean Vehicles” below. After a lengthy legal challenge, the U.S. Supreme Court declined to review an Appeals Court ruling that upheld the EPA Administrator’s findings (25).

**Clean Vehicles.** Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the U.S. On April 1, 2010, the EPA and the Department of Transportation's National Highway Safety Administration announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the U.S.

The first phase of the national program applies to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 miles per gallon if the automobile industry were to meet this carbon dioxide level solely through fuel economy improvements. Together, these standards would cut carbon dioxide emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016). The EPA and the National Highway Safety Administration issued final rules on a second-phase joint rulemaking establishing national standards for light-duty vehicles for model years 2017 through 2025 in August 2012 (EPA 2012c). The new standards for model years 2017 through 2025 apply to passenger cars, light-duty trucks, and medium duty passenger vehicles. The final standards are projected to result in an average industry fleetwide level of 163 grams/mile of carbon dioxide (CO<sub>2</sub>) in model year 2025, which is equivalent to 54.5 miles per gallon (mpg) if achieved exclusively through fuel economy improvements.

The EPA and the U.S. Department of Transportation issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks and buses on September 15, 2011, effective November 14, 2011. For combination tractors, the agencies are proposing engine and vehicle standards that begin in the 2014 model year and achieve up to a 20 percent reduction in carbon dioxide emissions and fuel consumption by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10-percent reduction for gasoline vehicles and a 15 percent reduction for diesel vehicles by the 2018 model year (12 and 17 percent respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10 percent reduction in fuel consumption and carbon dioxide emissions from the 2014 to 2018 model years.

**Mandatory Reporting of GHGs.** The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of GHGs Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the U.S. and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to the EPA.

**New Source Review.** The EPA issued a final rule on May 13, 2010, that establishes thresholds for GHGs that define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule “tailors” the requirements of these Clean Air Act permitting programs to limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits. In the preamble to the revisions to the Federal Code of Regulations, the EPA states:

This rulemaking is necessary because without it the Prevention of Significant Deterioration and Title V requirements would apply, as of January 2, 2011, at the 100 or 250 tons per year levels provided under the Clean Air Act, greatly increasing the number of required permits, imposing undue costs on small sources, overwhelming the resources of permitting authorities, and severely impairing the functioning of the programs. EPA is relieving these resource burdens by phasing in the applicability of these programs to GHG sources, starting with the largest GHG emitters. This rule establishes two initial steps of the phase-in. The rule also commits the agency to take certain actions on future steps addressing smaller sources, but excludes certain smaller sources from Prevention of Significant Deterioration and Title V permitting for GHG emissions until at least April 30, 2016.

The EPA estimates that facilities responsible for nearly 70 percent of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation’s largest GHG emitters—power plants, refineries, and cement production facilities.

**Standards of Performance for GHG Emissions for New Stationary Sources: Electric Utility Generating Units.** As required by a settlement agreement, the EPA proposed new performance standards for emissions of carbon dioxide for new, affected, fossil fuel-fired electric utility generating units on March 27, 2012. New sources greater than 25 megawatts would be required to meet an output based standard of 1,000 pounds of carbon dioxide per megawatt-hour, based on the performance of widely used natural gas combined cycle technology. It should be noted that on February 9, 2016 the U.S. Supreme Court issued a stay of this regulation pending litigation. Additionally, the current EPA Administrator has also signed a measure to repeal the Clean Power Plan, including the CO<sub>2</sub> standards.

**Cap and Trade.** Cap and trade refers to a policy tool where emissions are limited to a certain amount and can be traded, or provides flexibility on how the emitter can comply. Successful examples in the U.S. include the Acid Rain Program and the NO<sub>x</sub> Budget Trading Program and Clean Air Interstate Rule in the northeast. There is no federal GHG cap and trade program currently; however, some states have joined to create initiatives to provide a mechanism for cap and trade.

The Regional GHG Initiative is an effort to reduce GHGs among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. Each state caps carbon dioxide emissions from power plants, auctions carbon dioxide emission allowances, and invests the proceeds in strategic energy programs that further reduce

emissions, save consumers money, create jobs, and build a clean energy economy. The Initiative began in 2008.

The Western Climate Initiative partner jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15 percent below 2005 levels by 2020. The partners were originally California, British Columbia, Manitoba, Ontario, and Quebec. However, Manitoba and Ontario are not currently participating. California linked with Quebec's cap and trade system January 1, 2014, and joint offset auctions took place in 2015 (C2ES 2015).

**SmartWay Program.** The SmartWay Program is a public-private initiative between the EPA, large and small trucking companies, rail carriers, logistics companies, commercial manufacturers, retailers, and other federal and state agencies. Its purpose is to improve fuel efficiency and the environmental performance (reduction of both GHG emissions and air pollution) of the goods movement supply chains. SmartWay is comprised of four components (EPA 2014):

1. SmartWay Transport Partnership: A partnership in which freight carriers and shippers commit to benchmark operations, track fuel consumption, and improve performance annually.
2. SmartWay Technology Program: A testing, verification, and designation program to help freight companies identify equipment, technologies, and strategies that save fuel and lower emissions.
3. SmartWay Vehicles: A program that ranks light-duty cars and small trucks and identifies superior environmental performers with the SmartWay logo.
4. SmartWay International Interests: Guidance and resources for countries seeking to develop freight sustainability programs modeled after SmartWay.

SmartWay effectively refers to requirements geared towards reducing fuel consumption. Most large trucking fleets driving newer vehicles are compliant with SmartWay design requirements. Moreover, over time, all heavy-duty trucks will have to comply with the ARB GHG Regulation that is designed with the SmartWay Program in mind, to reduce GHG emissions by making them more fuel-efficient. For instance, in 2015, 53 foot or longer dry vans or refrigerated trailers equipped with a combination of SmartWay-verified low-rolling resistance tires and SmartWay-verified aerodynamic devices would obtain a total of 10 percent or more fuel savings over traditional trailers.

Through the SmartWay Technology Program, the EPA has evaluated the fuel saving benefits of various devices through grants, cooperative agreements, emissions and fuel economy testing, demonstration projects and technical literature review. As a result, the EPA has determined the following types of technologies provide fuel saving and/or emission reducing benefits when used properly in their designed applications, and has verified certain products:

- Idle reduction technologies – less idling of the engine when it is not needed would reduce fuel consumption.
- Aerodynamic technologies minimize drag and improve airflow over the entire tractor-trailer vehicle. Aerodynamic technologies include gap fairings that reduce turbulence between the tractor and trailer, side skirts that minimize wind under the trailer, and rear fairings that reduce turbulence and pressure drop at the rear of the trailer.

- Low rolling resistance tires can roll longer without slowing down, thereby reducing the amount of fuel used. Rolling resistance (or rolling friction or rolling drag) is the force resisting the motion when a tire rolls on a surface. The wheel will eventually slow down because of this resistance.
- Retrofit technologies include things such as diesel particulate filters, emissions upgrades (to a higher tier), etc., which would reduce emissions.
- Federal excise tax exemptions.

## CALIFORNIA

### Legislative Actions to Reduce GHGs

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation such as the landmark Assembly Bill (AB 32) California Global Warming Solutions Act of 2006 was specifically enacted to address GHG emissions. Other legislation such as Title 24 and Title 20 energy standards were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major provisions of the legislation.

**AB 32.** The California State Legislature enacted AB 32, which requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. “GHGs” as defined under AB 32 include carbon dioxide, methane, N<sub>2</sub>O, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Since AB 32 was enacted, a seventh chemical, nitrogen trifluoride, has also been added to the list of GHGs. The California Air Resources Board (ARB) is the state agency charged with monitoring and regulating sources of GHGs. AB 32 states the following:

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

ARB approved the 1990 GHG emissions level of 427 MMTCO<sub>2</sub>e on December 6, 2007 (ARB 2007). Therefore, emissions generated in California in 2020 are required to be equal to or less than 427 MMTCO<sub>2</sub>e. Emissions in 2020 in a “business as usual” (BAU) scenario were estimated to be 596 MMTCO<sub>2</sub>e, which do not account for reductions from AB 32 regulations (ARB 2008). At that level, a 28.4 percent reduction was required to achieve the 427 million MTCO<sub>2</sub>e 1990 inventory. In October 2010, ARB prepared an updated 2020 forecast to account for the recession and slower forecasted growth. The forecasted inventory without the benefits of adopted regulation is now estimated at 545 million MTCO<sub>2</sub>e. Therefore, under the updated forecast, a 21.7 percent reduction from BAU is required to achieve 1990 levels (ARB 2010).



## PROGRESS IN ACHIEVING AB 32 TARGETS AND REMAINING REDUCTIONS REQUIRED

The State has made steady progress in implementing AB 32 and achieving targets included in Executive Order S-3-05. The progress is shown in updated emission inventories prepared by ARB for 2000 through 2012 (ARB 2014a). The State has achieved the Executive Order S-3-05 target for 2010 of reducing GHG emissions to 2000 levels. As shown below, the 2010 emission inventory achieved this target.

- 1990: 427 million MTCO<sub>2</sub>e (AB 32 2020 target)
- 2000: 463 million MTCO<sub>2</sub>e (an average 8 percent reduction needed to achieve 1990 base)
- 2010: 450 million MTCO<sub>2</sub>e (an average 5 percent reduction needed to achieve 1990 base)

ARB has also made substantial progress in achieving its goal of achieving 1990 emissions levels by 2020. As described earlier in this section, ARB revised the 2020 BAU inventory forecast to account for new lower growth projections, which resulted in a new lower reduction from BAU to achieve the 1990 base. The previous reduction from 2020 BAU needed to achieve 1990 levels was 28.4 percent and the latest reduction from 2020 BAU is 21.7 percent.

- 2020: 545 million MTCO<sub>2</sub>e BAU (an average 21.7 percent reduction from BAU needed to achieve 1990 base)

**ARB Scoping Plan.** ARB's Climate Change Scoping Plan (Scoping Plan) contains measures designed to reduce the State's emissions to 1990 levels by the year 2020 to comply with AB 32 (ARB 2008). The Scoping Plan identifies recommended measures for multiple GHG emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. Most of the measures target the transportation and electricity sectors. As stated in the Scoping Plan, the key elements of the strategy for achieving the 2020 GHG target include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- 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's long-term commitment to AB 32 implementation.

The ARB approved the First Update to the Scoping Plan (Update) on May 22, 2014. The Update identifies the next steps for California's climate change strategy. The Update shows how California continues on its path to meet the near-term 2020 GHG limit, but also sets a path

toward long-term, deep GHG emission reductions. The report establishes a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050. The Update identifies progress made to meet the near-term objectives of AB 32 and defines California's climate change priorities and activities Climate for the next several years. The Update does not set new targets for the State, but describes a path that would achieve the long term 2050 goal of Executive Order S-05-03 for emissions to decline to 80 percent below 1990 levels by 2050 (ARB 2014).

Forecasting the amount of emissions that would occur in 2020 if no actions are taken was necessary to assess the amount of reductions California must achieve to return to the 1990 emissions level by 2020 as required by AB 32. The no-action scenario is known as "business-as-usual" or BAU. The ARB originally defined the BAU scenario as emissions in the absence of any GHG emission reduction measures discussed in the Scoping Plan.

As part of CEQA compliance for the Scoping Plan, ARB prepared a Supplemental Functional Equivalent Document (FED) in 2011. The FED included an updated 2020 BAU emissions inventory projection based on current economic forecasts (i.e., as influenced by the economic downturn) and emission reduction measures already in place, replacing its prior 2020 BAU emissions inventory. ARB staff derived the updated emissions estimates by projecting emissions growth, by sector, from the state's average emissions from 2006–2008. The new BAU estimate includes emission reductions for the million-solar-roofs program, the AB 1493 (Pavley I) motor vehicle GHG emission standards, and the Low Carbon Fuels Standard. In addition, ARB factored into the 2020 BAU inventory emissions reductions associated with 33 percent Renewable Energy Portfolio Standard (RPS) for electricity generation. The updated BAU estimate of 507 MMTCO<sub>2</sub>e by 2020 requires a reduction of 80 MMTCO<sub>2</sub>e, or a 16 percent reduction below the estimated BAU levels to return to 1990 levels (i.e., 427 MMTCO<sub>2</sub>e) by 2020.

In order to provide a BAU reduction that is consistent with the original definition in the Scoping Plan and with threshold definitions used in thresholds adopted by lead agencies for CEQA purposes and many climate action plans, the updated inventory without regulations was also included in the Supplemental FED. The ARB 2020 BAU projection for GHG emissions in California was originally estimated to be 596 MMTCO<sub>2</sub>e. The updated ARB 2020 BAU projection in the Supplemental FED is 545 MMTCO<sub>2</sub>e. Considering the updated BAU estimate of 545 MMTCO<sub>2</sub>e by 2020, ARB estimates a 21.7 percent reduction below the estimated statewide BAU levels is necessary to return to 1990 emission levels (i.e., 427 MMTCO<sub>2</sub>e) by 2020, instead of the approximate 28.4 percent BAU reduction previously reported under the original Climate Change Scoping Plan (2008).

### 2017 Climate Change Scoping Plan Update

In November 2017, ARB released the final 2017 Scoping Plan Update, which identifies the State's post-2020 reduction strategy. The 2017 Scoping Plan Update reflects the 2030 target of a 40 percent reduction below 1990 levels, set by Executive Order B-30-15 and codified by Senate Bill 32 (SB 32). Key programs that the proposed Second Update builds upon include the Cap-and-Trade Regulation, the Low Carbon Fuel Standard, and much cleaner cars, trucks and

freight movement, utilizing cleaner, renewable energy, and strategies to reduce methane emissions from agricultural and other wastes.

The 2017 Scoping Plan establishes a new emissions limit of 260 MMTCO<sub>2</sub>e for the year 2030, which corresponds to a 40 percent decrease in 1990 levels by 2030.

California's climate strategy will require contributions from all sectors of the economy, including the land base, and will include enhanced focus on zero- and near-zero-emission (ZE/NZE) vehicle technologies; continued investment in renewables, including solar roofs, wind, and other distributed generation; greater use of low carbon fuels; integrated land conservation and development strategies; coordinated efforts to reduce emissions of short-lived climate pollutants (methane, black carbon, and fluorinated gases); and an increased focus on integrated land use planning to support livable, transit-connected communities and conservation of agricultural and other lands. Requirements for direct GHG reductions at refineries will further support air quality co-benefits in neighborhoods, including in disadvantaged communities historically located adjacent to these large stationary sources, as well as efforts with California's local air pollution control and air quality management districts (air districts) to tighten emission limits on a broad spectrum of industrial sources. Major elements of the 2017 Scoping Plan framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing ZEV buses and trucks.
- Low Carbon Fuel Standard (LCFS), with an increased stringency (18 percent by 2030).
- Implementing SB 350, which expands the Renewables Portfolio Standard (RPS) to 50 percent RPS and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks.
- Implementing the proposed Short-Lived Climate Pollutant Strategy (SLPS), which focuses on reducing methane and hydrofluorocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030.
- Continued implementation of SB 375.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- 20 percent reduction in GHG emissions from refineries by 2030.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

In addition to the statewide strategies listed above, the 2017 Scoping Plan also identifies local governments as essential partners in achieving the State's long-term GHG reduction goals and identifies local actions to reduce GHG emissions. As part of the recommended actions, CARB recommends that local governments achieve a community-wide goal to achieve emissions of no more than 6 MTCO<sub>2</sub>e or less per capita by 2030 and 2 MTCO<sub>2</sub>e or less per capita by 2050. For CEQA projects, CARB states that lead agencies may develop evidenced-based bright-line numeric thresholds—consistent with the Scoping Plan and the State's long-term GHG goals—and projects with emissions over that amount may be required to incorporate on-site design features and mitigation measures that avoid or minimize project emissions to the degree

feasible; or, a performance-based metric using a climate action plan or other plan to reduce GHG emissions is appropriate.

According to research conducted by the Lawrence Berkeley National Laboratory and supported by ARB, California, under its existing and proposed GHG reduction policies, is on track to meet the 2020 reduction targets under AB 32 and could achieve the 2030 goals under SB 32. The research utilized a new, validated model known as the California LBNL GHG Analysis of Policies Spreadsheet (CALGAPS), which simulates GHG and criteria pollutant emissions in California from 2010 to 2050 in accordance to existing and future GHG-reducing policies. The CALGAPS model showed that GHG emissions through 2020 could range from 317 to 415 MTCO<sub>2</sub>e per year, “indicating that existing state policies will likely allow California to meet its target [of 2020 levels under AB 32].” CALGAPS also showed that by 2030, emissions could range from 211 to 428 MTCO<sub>2</sub>e per year, indicating that “even if all modeled policies are not implemented, reductions could be sufficient to reduce emissions 40 percent below the 1990 level [of SB 32].” CALGAPS analyzed emissions through 2050 even though it did not generally account for policies that might be put in place after 2030. Though the research indicated that the emissions would not meet the State’s 80 percent reduction goal by 2050, various combinations of policies could allow California’s cumulative emissions to remain very low through 2050 (26) (27).

**Senate Bill 32.** On September 8, 2016, Governor Jerry Brown signed the Senate Bill (SB) 32 and its companion bill, Assembly Bill (AB) 197. SB 32 requires the state to reduce statewide GHG emissions to 40 percent below 1990 levels by 2030, a reduction target that was first introduced in Executive Order B-30-15. The new legislation builds upon the AB 32 goal of 1990 levels by 2020 and provides an intermediate goal to achieving S-3-05, which sets a statewide GHG reduction target of 80 percent below 1990 levels by 2050. AB 197 creates a legislative committee to oversee regulators to ensure that ARB is not only respond to the Governor, but also the Legislature (28) (29).

**Cap and Trade Program.** The Scoping Plan identifies a Cap-and-Trade Program as one of the key strategies for California to reduce GHG emissions. According to ARB, a cap-and-trade program will help put California on the path to meet its goal of reducing GHG emissions to 1990 levels by the year 2020 and ultimately achieving an 80 percent reduction from 1990 levels by 2050. Under cap-and-trade, an overall limit on GHG emissions from capped sectors is established, and facilities subject to the cap will be able to trade permits to emit GHGs within the overall limit.

ARB adopted a California Cap-and-Trade Program pursuant to its authority under AB 32. See 17 California Code of Regulations (CCR) §§ 95800 to 96023. The Cap-and-Trade Program is designed to reduce GHG emissions from major sources (deemed “covered entities”) by setting a firm cap on statewide GHG emissions and employing market mechanisms to achieve AB 32’s emission-reduction mandate of returning to 1990 levels of emissions by 2020. The statewide cap for GHG emissions from the capped sectors (e.g., electricity generation, petroleum refining, and cement production) commenced in 2013 and will decline over time, achieving GHG emission reductions throughout the program’s duration.

Covered entities that emit more than 25,000 MTCO<sub>2</sub>e per year must comply with the Cap-and-Trade Program. Triggering of the 25,000 MTCO<sub>2</sub>e per year “inclusion threshold” is measured

against a subset of emissions reported and verified under the California Regulation for the Mandatory Reporting of GHG Emissions (Mandatory Reporting Rule or “MRR”).

Under the Cap-and-Trade Program, ARB issues allowances equal to the total amount of allowable emissions over a given compliance period and distributes these to regulated entities. Covered entities are allocated free allowances in whole or part (if eligible), and may buy allowances at auction, purchase allowances from others, or purchase offset credits. Each covered entity with a compliance obligation is required to surrender “compliance instruments” (30) for each MTCO<sub>2</sub>e of GHG they emit. There also are requirements to surrender compliance instruments covering 30 percent of the prior year’s compliance obligation by November of each year. For example, in November 2014, a covered entity was required to submit compliance instruments to cover 30 percent of its 2013 GHG emissions.

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

The Cap-and-Trade Regulation gives companies the flexibility to trade allowances with others or take steps to cost-effectively reduce emissions at their own facilities. Companies that emit more have to turn in more allowances or other compliance instruments. Companies that can cut their GHG emissions have to turn in fewer allowances. But as the cap declines, aggregate emissions must be reduced. In other words, a covered entity theoretically could increase its GHG emissions every year and still comply with the Cap-and-Trade Program if there is a reduction in GHG emissions from other covered entities. Such a focus on aggregate GHG emissions is considered appropriate because climate change is a global phenomenon, and the effects of GHG emissions are considered cumulative (ARB 2014).

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

The Cap-and-Trade Program establishes an overall limit on GHG emissions from most of the California economy—the “capped sectors.” Within the capped sectors, some of the reductions are being accomplished through direct regulations, such as improved building and appliance efficiency standards, the [Low Carbon Fuel Standard] LCFS, and the 33 percent [Renewables Portfolio Standard] RPS. Whatever additional reductions are needed to bring emissions within the cap is accomplished through price incentives posed by emissions

allowance prices. Together, direct regulation and price incentives assure that emissions are brought down cost-effectively to the level of the overall cap. The Cap-and-Trade Regulation provides assurance that California's 2020 limit will be met because the regulation sets a firm limit on 85 percent of California's GHG emissions. In sum, the Cap-and-Trade Program will achieve aggregate, rather than site specific or project-level, GHG emissions reductions. Also, due to the regulatory architecture adopted by ARB in AB 32, the reductions attributed to the Cap-and-Trade Program can change over time depending on the State's emissions forecasts and the effectiveness of direct regulatory measures (ARB 2014).

As of January 1, 2015, the Cap-and-Trade Program covered approximately 85 percent of California's GHG emissions. The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are covered by the Cap-and-Trade Program.

The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the Program's first compliance period. While the Cap-and-Trade Program technically covered fuel suppliers as early as 2012, they did not have a compliance obligation (i.e., they were not fully regulated) until 2015. The Cap-and-Trade Program covers the GHG emissions associated with the combustion of transportation fuels in California, whether refined in-state or imported. The point of regulation for transportation fuels is when they are "supplied" (i.e., delivered into commerce). Accordingly, as with stationary source GHG emissions and GHG emissions attributable to electricity use, virtually all, if not all, of GHG emissions from CEQA projects associated with vehicle-miles traveled (VMT) are covered by the Cap-and-Trade Program (ARB 2015) (30).

In addition, the Scoping Plan differentiates between "capped" and "uncapped" strategies. "Capped" strategies are subject to the proposed cap-and-trade program. The Scoping Plan states that the inclusion of these emissions within the Program will help ensure that the year 2020 emission targets are met despite some degree of uncertainty in the emission reduction estimates for any individual measure. Implementation of the capped strategies is calculated to achieve a sufficient amount of reductions by 2020 to achieve the emission target contained in AB 32. "Uncapped" strategies that will not be subject to the cap-and-trade emissions caps and requirements are provided as a margin of safety by accounting for additional GHG emission reductions.<sup>3</sup>

<sup>3</sup> On March 17, 2011, the San Francisco Superior Court issued a final decision in *Association of Irrigated Residents v. California Air Resources Board* (Case No. CPF-09-509562). While the Court upheld the validity of the ARB Scoping Plan for the implementation of AB 32, the Court enjoined ARB from further rulemaking under AB 32 until ARB amends its CEQA environmental review of the Scoping Plan to address the flaws identified by the Court. On May 23, 2011, ARB filed an appeal. On June 24, 2011, the Court of Appeal granted ARB's petition staying the trial court's order pending consideration of the appeal. In the interest of informed decision-making, on June 13, 2011, ARB released the expanded alternatives analysis in a draft Supplement to the AB 32 Scoping Plan Functional Equivalent Document. The ARB Board approved the Scoping Plan and the CEQA document on August 24, 2011.

**SB 375 - the Sustainable Communities and Climate Protection Act of 2008.** Passing the Senate on August 30, 2008, Senate Bill (SB) 375 was signed by the Governor on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits over 40 percent of the total GHG emissions in California. SB 375 states, “Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32.” SB 375 does the following: it (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

Concerning CEQA, SB 375, as codified in Public Resources Code Section 21159.28, states that CEQA findings for certain projects are not required to reference, describe, or discuss (1) growth inducing impacts, or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network, if the project:

1. Is in an area with an approved sustainable communities strategy or an alternative planning strategy that the ARB accepts as achieving the GHG emission reduction targets.
2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies).
3. Incorporates the mitigation measures required by an applicable prior environmental document.

**AB 1493 Pavley Regulations and Fuel Efficiency Standards.** California AB 1493, enacted on July 22, 2002, required ARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA’s denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the U.S. District Court for the District of Columbia in 2011.

The standards phase in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards will result in about a 22 percent reduction compared with the 2002 fleet, and the mid-term (2013–2016) standards will result in about a 30 percent reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant.

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

infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California.

**SB 350— Clean Energy and Pollution Reduction Act of 2015.** In October 2015, the legislature approved and the Governor signed SB 350, which reaffirms California’s commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the renewables portfolio standard (RPS), higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations. Provisions for a 50 percent reduction in the use of petroleum statewide were removed from the Bill because of opposition and concern that it would prevent the Bill’s passage. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33 percent to 50 percent by 2030, with interim targets of 40 percent by 2024, and 25 percent by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utility Commission (CPUC), the California Energy Commission (CEC), and local publicly-owned utilities.
- Reorganize the Independent System Operator (ISO) to develop more regional electrify transmission markets and to improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States (California Leginfo 2015).

#### **EXECUTIVE ORDERS RELATED TO GHG EMISSIONS**

California’s Executive Branch has taken several actions to reduce GHGs through the use of Executive Orders. Although not regulatory, they set the tone for the state and guide the actions of state agencies.

**Executive Order S-3-05.** Former California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following reduction targets for GHG emissions:

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

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

**Executive Order S-01-07 – Low Carbon Fuel Standard.** The Governor signed Executive Order S-01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California’s transportation fuels by at least 10 percent by 2020. In particular, the Executive Order established a Low Carbon Fuel Standard and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, the ARB, the University of California, and other agencies to develop and propose



protocols for measuring the “life-cycle carbon intensity” of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by California Energy Commission on December 24, 2007) and was submitted to ARB for consideration as an “early action” item under AB 32. The ARB adopted the Low Carbon Fuel Standard on April 23, 2009.

The Low Carbon Fuel Standard was challenged in the U.S. District Court in Fresno in 2011. The court’s ruling issued on December 29, 2011, included a preliminary injunction against ARB’s implementation of the rule. The Ninth Circuit Court of Appeals stayed the injunction on April 23, 2012, pending final ruling on appeal, allowing ARB to continue to implement and enforce the regulation. The Ninth Circuit Court’s decision, filed September 18, 2013, vacated the preliminary injunction. In essence, the court held that Low Carbon Fuel Standards adopted by ARB were not in conflict with federal law. On August 8, 2013, the Fifth District Court of Appeal (California) ruled ARB failed to comply with CEQA and the Administrative Procedure Act (APA) when adopting regulations for Low Carbon Fuel Standards. In a partially published opinion, the Court of Appeal reversed the trial court’s judgment and directed issuance of a writ of mandate setting aside Resolution 09-31 and two executive orders of ARB approving Low Carbon Fuel Standards (LCFS) regulations promulgated to reduce GHG emissions. However, the court tailored its remedy to protect the public interest by allowing the LCFS regulations to remain operative while ARB complies with the procedural requirements it failed to satisfy.

To address the Court ruling, ARB was required to bring a new LCFS regulation to its Board for consideration in February 2015. The proposed LCFS regulation was required to contain revisions to the 2010 LCFS as well as new provisions designed to foster investments in the production of the low-carbon intensity (low-CI) fuels, offer additional flexibility to regulated parties, update critical technical information, simplify and streamline program operations, and enhance enforcement. The second public hearing was held on September 24 and September 25, 2015, where the LCFS Regulation was adopted. The Final Rulemaking Package adopting the regulation was filed with Office of Administrative Law (OAL) on October 2, 2015. OAL had until November 16, 2015 to make a determination (ARB 2015d).

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

**Executive Order B-30-15.** On April 29, 2015, Governor Edmund G. Brown Jr. issued an executive order to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor’s executive order aligns California’s GHG reduction targets with those of leading international governments ahead of the United Nations Climate Change Conference in Paris late 2015. The Order sets a new interim statewide GHG emission reduction target to

reduce GHG emissions to 40 percent below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050 and directs ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of CO<sub>2</sub> equivalent (MMCO<sub>2</sub>e). The Order also requires the state's climate adaptation plan to be updated every three years, and for the State to continue its climate change research program, among other provisions. As with Executive Order S-3-05, this Order is not legally enforceable for local governments and the private sector. Legislation that would update AB 32 to make post 2020 targets and requirements a mandate is in process in the State Legislature.

#### **CALIFORNIA REGULATIONS AND BUILDING CODES**

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations have kept California's energy consumption relatively flat even with rapid population growth.

**Title 20 Appliance Efficiency Standards.** California Code of Regulations, Title 20: Division 2, Chapter 4, Article 4, Sections 1601-1608: Appliance Efficiency Regulations regulates the sale of appliances in California. The Appliance Efficiency Regulations include standards for both federally regulated appliances and non-federally regulated appliances. 23 categories of appliances are included in the scope of these regulations. The standards within these regulations apply to appliances that are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles or other mobile equipment (CEC 2012).

**Title 24 Energy Efficiency Standards and California Green Building Standards.** California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The newest 2016 version of Title 24 was adopted by the California Energy Commission (CEC) and became effective on January 1, 2017.

The CEC indicates that the 2016 Title 24 standards will reduce energy consumption by 5 percent for nonresidential buildings above that achieved by the 2013 Title 24 (CEC 2015).

California Code of Regulations, Title 24, Part 11: California Green Building Standards Code (CALGreen) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect on January 1, 2011, and is administered by the California Building Standards Commission. CALGreen is updated on a regular basis, with the most recent update consisting of the 2016 California Green Building Code Standards that became effective January 1, 2017. Local jurisdictions are permitted to adopt more stringent requirements, as state law provides methods for local enhancements. CALGreen recognizes that many jurisdictions have developed existing construction and demolition ordinances, and defers to them as the ruling guidance provided they establish a minimum 50 percent diversion

requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. The State Building Code provides the minimum standard that buildings must meet in order to be certified for occupancy, which is generally enforced by the local building official. CALGreen requires:

- Short-term bicycle parking. If a commercial project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5 percent of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- Long-term bicycle parking. For new buildings with 10 or more tenant-occupants, provide secure bicycle parking for 5 percent of tenant-occupied motorized vehicle parking capacity, with a minimum of one space (5.106.4.1.2).
- Designated parking. Provide designated parking in commercial projects for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of nonhazardous materials for recycling (5.410.1).
- Construction waste. A minimum 65 percent diversion of construction and demolition waste from landfills, increasing voluntarily to 80 percent for new homes and commercial projects (5.408.1, A5.408.3.1 [nonresidential], A5.408.3.1 [residential]). All (100 percent) of trees, stumps, rocks and associated vegetation and soils resulting from land clearing shall be reused or recycled (5.408.3).
- Wastewater reduction. Each building shall reduce the generation of wastewater by one of the following methods:
  - The installation of water-conserving fixtures (5.303.3) or
  - Using nonpotable water systems (5.303.4).
- Water use savings. 20 percent mandatory reduction of indoor water use with voluntary goal standards for 30, 35 and 40 percent reductions (5.303.2, A5303.2.3 [nonresidential]).
- Water meters. Separate water meters for buildings in excess of 50,000 square feet or buildings projected to consume more than 1,000 gallons per day (5.303.1).
- Irrigation efficiency. Moisture-sensing irrigation systems for larger landscaped areas (5.304.3).
- Materials pollution control. Low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring, and particleboard (5.404).
- Building commissioning. Mandatory inspections of energy systems (i.e., heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies (5.410.2)..

**Model Water Efficient Landscape Ordinance.** The Model Water Efficient Landscape Ordinance (Ordinance) was required by AB 1881, the Water Conservation Act. The bill required local agencies to adopt a local landscape ordinance at least as effective in conserving water as the Model Ordinance by January 1, 2010. Reductions in water use of 20 percent consistent with (SBX-7-7) 2020 mandate are expected upon compliance with the ordinance. Governor Brown's Drought Executive Order of April 1, 2015 (EO B-29-15) directed Department of Water Resources (DWR) to update the Ordinance through expedited regulation. The California Water

Commission approved the revised Ordinance on July 15, 2015 effective December 15, 2015. New development projects that include landscape areas of 500 square feet or more are subject to the Ordinance. The update requires:

- More efficient irrigation systems;
- Incentives for graywater usage;
- Improvements in on-site stormwater capture;
- Limiting the portion of landscapes that can be planted with high water use plants; and
- Reporting requirements for local agencies.

**ARB Refrigerant Management Program.** ARB adopted a regulation in 2009 to reduce refrigerant GHG emissions from stationary sources through refrigerant leak detection and monitoring, leak repair, system retirement and retrofitting, reporting and recordkeeping, and proper refrigerant cylinder use, sale, and disposal. The regulation is set forth in sections 95380 to 95398 of Title 17, California Code of Regulations. The rules implementing the regulation establish a limit on statewide GHG emissions from stationary facilities with refrigeration systems with more than 50 pounds of a high GWP refrigerant. The refrigerant management program is designed to (1) reduce emissions of high-GWP GHG refrigerants from leaky stationary, non-residential refrigeration equipment; (2) reduce emissions from the installation and servicing of refrigeration and air-conditioning appliances using high-GWP refrigerants; and (3) verify GHG emission reductions.

**Tractor-Trailer GHG Regulation.** The tractors and trailers subject to this regulation must either use EPA SmartWay certified tractors and trailers, or retrofit their existing fleet with SmartWay verified technologies. The regulation applies primarily to owners of 53-foot or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the heavy-duty tractors that pull them on California highways. These owners are responsible for replacing or retrofitting their affected vehicles with compliant aerodynamic technologies and low rolling resistance tires. Sleeper cab tractors model year 2011 and later must be SmartWay certified. All other tractors must use SmartWay verified low rolling resistance tires. There are also requirements for trailers to have low rolling resistance tires and aerodynamic devices.

**Phase 1 and 2 Heavy-Duty Vehicle GHG Standards.** ARB has adopted a new regulation for greenhouse gas (GHG) emissions from heavy-duty trucks and engines sold in California. It establishes GHG emission limits on truck and engine manufacturers and harmonizes with the U.S. EPA rule for new trucks and engines nationally. Existing heavy-duty vehicle regulations in California include engine criteria emission standards, tractor-trailer GHG requirements to implement SmartWay strategies (i.e., the Heavy-Duty Tractor-Trailer Greenhouse Gas Regulation), and in-use fleet retrofit requirements such as the Truck and Bus Regulation. In September 2011, the U.S. EPA adopted their new rule for heavy-duty trucks and engines. The U.S. EPA rule has compliance requirements for new compression and spark ignition engines, as well as trucks from Class 2b through Class 8. Compliance requirements begin with model year (MY) 2014 with stringency levels increasing through MY 2018. The rule organizes truck compliance into three groupings, which include a) heavy-duty pickups and vans; b) vocational vehicles; and c) combination tractors. The U.S. EPA rule does not regulate trailers.

ARB staff has worked jointly with the U.S. Environmental Protection Agency (U.S. EPA) and the National Highway Traffic Safety Administration (NHTSA) on the next phase of federal greenhouse gas (GHG) emission standards for medium- and heavy-duty vehicles, called federal Phase 2. The federal Phase 2 standards were built on the improvements in engine and vehicle efficiency required by the Phase 1 emission standards and represent a significant opportunity to achieve further GHG reductions for 2018 and later model year heavy-duty vehicles, including trailers.

U.S. EPA and NHTSA issued a Notice of Proposed Rulemaking for Phase 2 in June 2015, and published the final rule in October 2016. ARB staff plans to bring a proposed California Phase 2 program before the Board in early 2018. ARB staff remains committed to a strong national program which will support California's GHG reduction commitments.

**SB 97 and the CEQA Guidelines Update.** Passed in August 2007, SB 97 added Section 21083.05 to the Public Resources Code. The code states “(a) On or before July 1, 2009, the Office of Planning and Research shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of GHG emissions or the effects of GHG emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the Office of Planning and Research pursuant to subdivision (a).” Section 21097 was also added to the Public Resources Code. It provided CEQA protection until January 1, 2010 for transportation projects funded by the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 or projects funded by the Disaster Preparedness and Flood Prevention Bond Act of 2006, in stating that the failure to analyze adequately the effects of GHGs would not violate CEQA.

On April 13, 2009, the Office of Planning and Research submitted to the Secretary for Natural Resources its recommended amendments to the CEQA Guidelines for addressing GHG emissions. On July 3, 2009, the Natural Resources Agency commenced the Administrative Procedure Act rulemaking process for certifying and adopting these amendments pursuant to Public Resources Code section 21083.05. Following a 55-day public comment period and two public hearings, the Natural Resources Agency proposed revisions to the text of the proposed Guidelines amendments. The Natural Resources Agency transmitted the adopted amendments and the entire rulemaking file to the Office of Administrative Law on December 31, 2009. On February 16, 2010, the Office of Administrative Law approved the Amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The Amendments became effective on March 18, 2010.

The CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing CEQA Guidelines to reference climate change.

A new section, CEQA Guidelines Section 15064.4, was added to assist agencies in determining the significance of GHG emissions. The new section allows agencies the discretion to determine whether a quantitative or qualitative analysis is best for a particular project. However, little

guidance is offered on the crucial next step in this assessment process—how to determine whether the project’s estimated GHG emissions are significant or cumulatively considerable.

Also amended were CEQA Guidelines Sections 15126.4 and 15130, which address mitigation measures and cumulative impacts, respectively. GHG mitigation measures are referenced in general terms, but no specific measures are championed. The revision to the cumulative impact discussion requirement (Section 15130) simply directs agencies to analyze GHG emissions in an EIR when a project’s incremental contribution of emissions may be cumulatively considerable, however it does not answer the question of when emissions are cumulatively considerable.

Section 15183.5 permits programmatic GHG analysis and later project-specific tiering, as well as the preparation of GHG Reduction Plans. Compliance with such plans can support a determination that a project’s cumulative effect is not cumulatively considerable, according to Section 15183.5(b).

In addition, the amendments revised Appendix F of the CEQA Guidelines, which focuses on Energy Conservation. The sample environmental checklist in Appendix G was amended to include GHG questions.

## **REGIONAL**

The project is within the Southern California Air Basin (SoCAB), which is under the jurisdiction of the SCAQMD.

### **South Coast Air Quality Management District**

SCAQMD is the agency responsible for air quality planning and regulation in the SoCAB. The SCAQMD addresses the impacts to climate change of projects subject to SCAQMD permit as a lead agency if they are the only agency having discretionary approval for the project and acts as a responsible agency when a land use agency must also approve discretionary permits for the project. The SCAQMD acts as an expert commenting agency for impacts to air quality. This expertise carries over to GHG emissions, so the agency helps local land use agencies through the development of models and emission thresholds that can be used to address GHG emissions.

In 2008, SCAQMD formed a Working Group to identify GHG emissions thresholds for land use projects that could be used by local lead agencies in the SoCAB. The Working Group developed several different options that are contained in the SCAQMD Draft Guidance Document – Interim CEQA GHG Significance Threshold, that could be applied by lead agencies. The working group has not provided additional guidance since release of the interim guidance in 2008. The SCAQMD Board has not approved the thresholds; however, the Guidance Document provides substantial evidence supporting the approaches to significance of GHG emissions that can be considered by the lead agency in adopting its own threshold. The current interim thresholds consist of the following tiered approach:

- Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.

- Tier 2 consists of determining whether the project is consistent with a GHG reduction plan. If a project is consistent with a qualifying local GHG reduction plan, it does not have significant GHG emissions.
- Tier 3 consists of screening values, which the lead agency can choose, but must be consistent with all projects within its jurisdiction. A project's construction emissions are averaged over 30 years and are added to the project's operational emissions. If a project's emissions are below one of the following screening thresholds, then the project is less than significant:
  - Residential and Commercial land use: 3,000 MTCO<sub>2</sub>e per year
  - Based on land use type: residential: 3,500 MTCO<sub>2</sub>e per year; commercial: 1,400 MTCO<sub>2</sub>e per year; or mixed use: 3,000 MTCO<sub>2</sub>e per year
- Tier 4 has the following options:
  - Option 1: Reduce BAU emissions by a certain percentage; this percentage is currently undefined.
  - Option 2: Early implementation of applicable AB 32 Scoping Plan measures
  - Option 3, 2020 target for service populations (SP), which includes residents and employees: 4.8 MTCO<sub>2</sub>e/SP/year for projects and 6.6 MTCO<sub>2</sub>e/SP/year for plans;
  - Option 3, 2035 target: 3.0 MTCO<sub>2</sub>e/SP/year for projects and 4.1 MTCO<sub>2</sub>e/SP/year for plans
- Tier 5 involves mitigation offsets to achieve target significance threshold.

The SCAQMD's interim thresholds used the Executive Order S-3-05 year 2050 goal as the basis for the Tier 3 screening level. Achieving the Executive Order's objective would contribute to worldwide efforts to cap carbon dioxide concentrations at 450 ppm, thus stabilizing global climate.

SCAQMD only has authority over GHG emissions from development projects that include air quality permits. At this time, it is unknown if the project would include stationary sources of emissions subject to SCAQMD permits. Notwithstanding, if the Project requires a stationary permit, it would be subject to the applicable SCAQMD regulations.

SCAQMD Regulation XXVII, adopted in 2009 includes the following rules:

- Rule 2700 defines terms and post global warming potentials.
- Rule 2701, SoCal Climate Solutions Exchange, establishes a voluntary program to encourage, quantify, and certify voluntary, high quality certified GHG emission reductions in the SCAQMD.
- Rule 2702, GHG Reduction Program created a program to produce GHG emission reductions within the SCAQMD. The SCAQMD will fund projects through contracts in response to requests for proposals or purchase reductions from other parties.

## **2.8 SCAG REGIONAL TRANSPORTATION PLAN/SUSTAINABLE COMMUNITIES STRATEGY**

The 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) for the SCAG region was prepared to ensure that the Southern California region attains the per capita vehicle miles targets for passenger vehicles identified by CARB, as required by Senate Bill 375 (31). The Project would be consistent with the plan for integrating the transportation network

and related strategies with an overall land use pattern that responds to projected growth, housing needs, changing demographics, and transportation demands. The Project's consistency with the proposed RTP strategies would therefore not conflict with GHG reduction goals set forth in the SCAG 2016 RTP/SCS.

## 2.9 CITY OF CHINO

The Chino Climate Action Plan (CAP) is implemented through Chino Municipal Code Chapter 15.45 – Climate Action Plan Implementation.

Under the CAP, the City of Chino selected a goal to reduce its community GHG emissions to a level that is 15 percent below its 2008 GHG emissions levels by 2020 consistent with AB 32 and recommended in the AB 32 Scoping Plan. In order to fulfill this commitment, GHG emissions-reducing development and performance standards have been established under the Chino Climate Action Plan as codified at Chino Municipal Code Chapter 15.45 – Climate Action Plan Implementation and are summarized as follows:

- Municipal Code Section 15.45.030 identifies specific development standards applicable to new residential development. In summary, new one-and two- family residential dwellings would be required to provide electrical systems capable of supporting future electric vehicle supply equipment (EVSE). All new residential development would be required to install ENERGY STAR appliances in instances where ENERGY STAR rated appliances are available. New residential construction would be required to divert or salvage at least 65 percent of non-hazardous construction and demolition debris generated at the site.
- Municipal Code Section 15.45.040 identifies specific development standards applicable to new non-residential development. In summary, new non-residential development would be required to install ENERGY STAR appliances in instances where ENERGY STAR rated appliances are available. New non-residential construction would be required to divert or salvage at least 65 percent of non-hazardous construction and demolition debris generated at the site.
- Municipal Code Section 15.45.050 identifies specific development standards applicable to model homes. Each residential development would be required to provide at one model home which offers and displays energy-saving options. The model home would also be required to provide signage identifying standard and optional features that contribute to overall energy efficiency of the home. Energy-saving options handout materials would be required to be available at the model home. Handout materials information would include but would not be limited descriptions of energy-saving features, their costs, benefits, and energy savings.
- Municipal Code Section 15.45.070 establishes GHG performance standards for new development, and requires that all new development contribute to the reduction of greenhouse gas emissions by demonstrating consistency with the Chino Climate Action Plan through implementation of one or a combination of the following three (3) options:
  1. Exceed by 3% the mandatory California Energy Code Title 24, Part 6 standards, in effect at the time of development application submittal for discretionary review; or
  2. Achieve an equivalent reduction through voluntary measures in the California Green Building Standards Code, Title 24, Part 11 (CALGreen) in effect at the time of development application submittal for discretionary review; or



3. Provide other equivalent GHG reductions through measures including, but not limited to, non-vehicle transportation infrastructure, transit, ZEV (zero emission vehicle) infrastructure or other incentives, waste diversion, water conservation, tree planting, renewable energy option packages, or any combination of these or other measures such that GHG emissions are reduced by 0.04 MT CO<sub>2</sub>e per residential dwelling unit per year and/or 0.11 MT CO<sub>2</sub>e per thousand square feet of commercial/industrial development per year.

## 2.10 DISCUSSION ON ESTABLISHMENT OF SIGNIFICANCE THRESHOLDS

As noted above, the City adopted The Chino Climate Action Plan and Plan Implementing Measures, effective in full force as of January 2, 2014. As part of the CAP, the City of Chino selected a goal to reduce its community GHG emissions to a level that is 15 percent below its 2008 GHG emissions levels by 2020 consistent with AB 32 and recommended in the AB 32 Scoping Plan. In order to fulfill this commitment, GHG emissions-reducing development and performance standards have been established under the Chino Climate Action Plan as codified at Chino Municipal Code Chapter 15.45 – Climate Action Plan Implementation.

The Project would comply with applicable provisions of Chino Municipal Code Chapter 15.45 – Climate Action Plan Implementation. More specifically, as provided herein, development within the Project site would be required to conform to “Option 1” listed above: “Exceed by 3% the mandatory California Energy Code Title 24, Part 6 standards, in effect at the time of development application submittal for discretionary review.” It should be noted in fact that the Project as part of its design will exceed the mandatory Title 24 requirements by 3% which meets the 3% target reduction established by the City of Chino.

Because the City’s CAP addresses GHG emissions reduction, is in concert with AB 32 and international efforts to address global climate change, and includes specific local requirements that will substantially lessen the cumulative problem, compliance with the CAP fulfills the description of mitigation found in *CEQA Guidelines* §15130(a)(3) and §15183.5.

As substantiated herein, the proposed Project would be consistent with the CAP, would be in concert with AB 32 and international efforts to address global climate change, and would reflect specific local requirements that would substantially lessen cumulative GHG emissions impacts. The proposed Project would therefore also fulfill the description of mitigation found in *CEQA Guidelines* §15130(a)(3) and §15183.5. The Project’s incremental contribution to GHG emissions impacts would therefore not be cumulatively considerable.

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### 3 PROJECT GREENHOUSE GAS IMPACT

#### 3.1 INTRODUCTION

The Project has been evaluated to determine if it will result in a significant greenhouse gas impact. The significance of these potential impacts is described in the following section.

#### 3.2 CALIFORNIA EMISSIONS ESTIMATOR MODEL™ EMPLOYED TO ESTIMATE GHG EMISSIONS

On October 17, 2017, the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) and other California air districts, released the latest version of the California Emissions Estimator Model™ (CalEEMod™) v2016.3.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (NO<sub>x</sub>, VOC, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>x</sub>, and CO) and greenhouse gas (GHG) emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (32). Accordingly, the latest version of CalEEMod™ has been used for this Project to determine construction and operational air quality emissions. Output from the model runs for both construction and operational activity are provided in Appendix 3.1. The CalEEMod model includes GHG emissions from the following source categories: construction, area, energy, mobile, waste, water.

#### 3.3 CONSTRUCTION AND OPERATIONAL LIFE-CYCLE ANALYSIS

A full life-cycle analysis (LCA) for construction and operational activity is not included in this analysis due to the lack of consensus guidance on LCA methodology at this time. Life-cycle analysis (i.e., assessing economy-wide GHG emissions from the processes in manufacturing and transporting all raw materials used in the project development, infrastructure and on-going operations) depends on emission factors or econometric factors that are not well established for all processes. At this time a LCA would be extremely speculative and thus has not been prepared.

Additionally, the SCAQMD recommends analyzing direct and indirect project GHG emissions generated within California and not life-cycle emissions because the life-cycle effects from a project could occur outside of California, might not be very well understood or documented, and would be challenging to mitigate (33). Additionally, the science to calculate life cycle emissions is not yet established or well defined, therefore SCAQMD has not recommended, and is not requiring, life-cycle emissions analysis.

#### 3.4 CONSTRUCTION EMISSIONS

Construction activities associated with the proposed Project will result in emissions of CO<sub>2</sub> and CH<sub>4</sub> from construction activities.

The report Altitude Business Center Air Quality Impact Analysis Report, Urban Crossroads, Inc. (2018) contains detailed information regarding construction activity (34).

For construction phase Project emissions, GHGs are quantified and amortized over the life of the Project. To amortize the emissions over the life of the Project, the SCAQMD recommends calculating the total greenhouse gas emissions for the construction activities, dividing it by a 30-year project life then adding that number to the annual operational phase GHG emissions (35). As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions.

### **3.5 OPERATIONAL EMISSIONS**

Operational activities associated with the proposed Project will result in emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O from the following primary sources:

- Area Source Emissions
- Energy Source Emissions
- Mobile Source Emissions
- Solid Waste
- Water Supply, Treatment and Distribution
- On-Site Equipment Emissions

#### **3.5.1 AREA SOURCE EMISSIONS**

##### Landscape Maintenance Equipment

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on assumptions provided in the CalEEMod model.

#### **3.5.2 ENERGY SOURCE EMISSIONS**

##### Combustion Emissions Associated with Natural Gas and Electricity

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. Unless otherwise noted, CalEEMod™ default parameters were used.

#### **3.5.3 MOBILE SOURCE EMISSIONS**

##### Vehicles

Project-related operational greenhouse gas impacts derive predominantly from mobile sources. In this regard, approximately 95 percent (by weight) of all Project operational-source emissions would be generated by mobile sources (vehicles). Neither the Project Applicant nor the City has

any regulatory control over these tail pipe emissions. Rather, vehicle tail pipe source emissions are regulated by CARB and USEPA. As summarized previously herein, as the result of CARB and USEPA actions, Basin-wide vehicular-source emissions have been reduced dramatically over the past years and are expected to further decline as clean vehicle and fuel technologies improve.

Under the Truck and Bus Regulation, adopted by CARB in 2008, all diesel truck fleets operating in California are required to adhere to an aggressive schedule for upgrading and replacing heavy-duty truck engines. Pursuant to such regulation, older, heavier trucks, i.e., those with pre-2000 year engines and a gross vehicle weight rating (GVWR) greater than 26,000 pounds are already required to have installed a PM filter and must be replaced with a 2010 engine between 2015 and 2020, depending on the model year. By 2015, all heavier pre-1994 trucks must be upgraded to 2010 engines and newer trucks are thereafter required to be replaced over the next eight years. Older, more polluting trucks are required to be replaced first, while trucks that already have relatively clean 2007-2009 engines are not required to be replaced until 2023. Lighter trucks (those with a GVWR of 14,001 to 26,000 pounds) must adhere to a similar schedule, and will all be replaced by 2020.

Further, nearly all trucks that are not required under the Truck and Bus Regulation to be replaced by 2015 are required to be upgraded with a PM filter by that date. Therefore, most heavy-duty trucks entering the project site will meet or exceed U.S. EPA 2007 and 2010 emission standards within a relatively short period of time after the project becomes operational in 2018, and all such trucks entering the property will meet or exceed such standards by 2023.

Project mobile source greenhouse gas impacts are dependent on both overall daily vehicle trip generation and the effect of the Project on peak hour traffic volumes and traffic operations in the vicinity of the Project. The Project related greenhouse gas impacts derive primarily from vehicle trips generated by the Project. Trip characteristics available from the report, Kimball Business Center (Renamed: Altitude Business Center) Traffic Impact Analysis (Urban Crossroads) 2018 were utilized in this analysis (36). It should be noted that the Project's traffic study presents the total Project vehicle trips in terms of Passenger Car Equivalents (PCEs) in an effort to recognize and acknowledge the effects of heavy vehicles at the study area intersections. Notwithstanding, for purposes of the greenhouse gas study, the PCE trips were not used. Rather, to more accurately estimate and model vehicular-source emissions, the actual number of vehicles, by vehicle classification (e.g., passenger cars (including light trucks), heavy trucks) were used in the analysis.

For purposes of this analysis, the following ITE land use codes and vehicle mixes have been utilized:

- ITE land use code 110 (General Light Industrial) has been used to derive site specific trip generation estimates for Buildings 1, 2, N, and O. The ITE *Trip Generation* manual includes very limited data regarding the types of vehicles that are generated for general light industrial uses (passenger cars and various sizes of trucks). As such, data regarding the vehicle mix has been obtained from a separate report; the City of Fontana *Truck Trip Generation Study* (August 2003) for the general light industrial uses proposed as part of the Project. Buildings 1, 2, N, and O

have been identified as light industrial. The “Light Industrial” vehicle mix data has been utilized for all 4 buildings.

- ITE land use code 150 (Warehousing) has been used to derive site specific trip generation estimates for Buildings 3, 4, 5, and 6. The ITE *Trip Generation* manual includes very limited data regarding the types of vehicles that are generated for warehousing uses (passenger cars and various sizes of trucks). Data regarding the vehicle mix has therefore been obtained from a separate report; the City of Fontana *Truck Trip Generation Study* (August 2003) for the warehousing use proposed as part of the Project. Buildings 6, 4, 5, and 6 have been identified as heavy warehouses. The “Heavy Warehouse” vehicle mix data has been utilized for all 4 buildings.
- ITE land use code 151 (Mini-Warehouse) has been used to derive the site specific trip generation estimates for Building M (self-storage facility). Although not typically applied, the ITE truck mix of 15% from the *Trip Generation* manual has been utilized to reflect potential truck traffic associated with the self-storage use. As such, the trip generation estimates for the self-storage use is anticipated to overstate as opposed to understate potential traffic impacts.
- ITE land use code 770 (Business Park) has been used to derive the site specific trip generation estimates for Buildings 7A, 7B, 8, 9, and A through L. Per the ITE *Trip Generation* manual and as shown on the preliminary site plan, the business park uses are not anticipated to generate any heavy truck traffic (i.e., absence of dock doors). As such, no vehicle mix has been applied to the business park uses proposed as part of the Project. Although there are no dock doors proposed, the ITE truck mix (13%) from the *Trip Generation* manual has been utilized in response to recent comments received on other projects prepared within the City. As such, the trip generation estimates for the business park use is anticipated to overstate as opposed to understate potential traffic impacts.

### 3.5.3.1 Trip Length

#### Background

A technical deficiency inherent in calculating the projected vehicle emissions associated with any project is related to the estimation of trip length and vehicle miles traveled (VMT). VMT for a given project is calculated by the total number of vehicle trips to/from the Project x average trip length. This method of estimating VMT for use in calculating vehicle emissions likely results in the over-estimation and double-counting of emissions because, for a distribution warehouse center such as the Project, the land use is likely to attract (divert) existing vehicle trips that are already on the circulation system as opposed to generating new trips. In this regard, the Project would, to a large extent, redistribute existing mobile-source emissions rather than generate additional emissions within the Basin. As such, the estimation of the Altitude Business Center Project’s vehicular-source emissions are likely overstated in that no credit for, or reduction in, emissions is assumed based on diversion of existing trips.

Provided below is a summary of the VMT recommendations of the SCAQMD and SCAG, followed by a description of the methodology used to calculate the VMT rates used in this GHGA.

## SCAQMD Recommendation

In the last five years, the SCAQMD has provided numerous comments on the trip length for warehouse/distribution and industrial land use projects (37). The SCAQMD asserts that the model-default trip length in CalEEMod™ and the URBan EMISSIONS (URBEMIS) 2007 model (version 9.2.4) would underestimate emissions. The SCAQMD asserts that for warehouse, distribution center, and industrial land use projects, most of the heavy-duty trucks would be hauling consumer goods, often from the Ports of Long Beach and Los Angeles (POLA and POLB) and/or to destinations outside of California. The SCAQMD states that for this reason, the CalEEMod™ and the URBan EMISSIONS model default trip length (approximately 12.6 miles) would not be representative of activities at like facilities. The SCAQMD generally recommends the use of a 40-mile one-way trip length.

## Southern California Association of Government (SCAG) Heavy Duty Truck Model

SCAG is comprised of six counties (Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura) and 190 cities in Southern California, and is the organization charged with addressing and resolving short- and long-term regional policy issues. The SCAG region also consists of 14 sub-regional entities recognized by the Regional Council as partners in the regional policy planning process. The SCAG region has more than 19 million residents and encompasses more than 38,000 square miles, representing the largest and most diverse region in the country.

SCAG maintains a regional transportation model. In its most recent (2008) transportation validation for the 2003 Regional Model, SCAG indicates the average internal truck trip length for the SCAG region is 5.92 miles for Light Duty Trucks, 13.06 miles for Medium Duty Trucks, and 24.11 miles for Heavy Duty Trucks.

## Approach for Analysis of the Project

The approach for analysis purposes in this GHGA report represents a conservative estimate of emissions and almost certainly overstates the emissions impact from the Project. Notwithstanding, other Environmental Impact Reports (EIRs) for similar land use projects within the City of Chino<sup>4</sup> have utilized the following conservative approach. To maintain consistency and provide for the “worst-case” scenario, the following approach has been utilized in calculating emissions associated with vehicles accessing the proposed Project.

For passenger car trips, a one-way trip length of 16.6 miles was assumed as contained in the CalEEMod™ model defaults. For trucks, an average one-way trip length of 50 miles was derived from distances from the Project site to the far edges of the South Coast Air Basin (SCAB) as follows. It is appropriate to stop the VMT calculation at the boundary of the SCAB because any activity beyond that boundary would be speculative, and occur in a different Air Basin; this approach is also consistent with professional industry practice.

- Project site to the Port of Los Angeles/Long Beach: 57 miles;

<sup>4</sup> Response to Comments on the Draft Environmental Impact Report *Chino South Industrial Park* – January 15, 2009.

- Project site to Cajon Pass: 48 miles;
- Project site to San Diego County line: 48 miles;
- Project site to Banning Pass: 55 miles;
- Downtown Los Angeles: 43 miles;
- Average Long-Haul Truck Trip = 50.2 miles (average of the above four trip lengths).

Two separate model runs for each warehouse land use (General Light Industrial, Warehouse, Mini-Warehouse, and Business Park) were utilized in order to more accurately model emissions resulting from vehicle operations. The first runs analyzed passenger car emissions, which incorporated a default trip length of 16.6 miles for passenger cars within San Bernardino County and a fleet mix of 100% Light-Duty-Auto vehicles (LDA). The second runs analyzed truck emissions, which incorporated an average truck trip length of 50.2 miles based on the average long-haul truck trips and a fleet mix of the following based on land use:

- General Light Industrial: 37.40% LHD, 18.23% MHD, and 44.37% HHD
- Warehouse: 16.92% LHD, 22.69% MHD, and 60.39% HHD
- Mini-Warehouse: 24.86% LHD, 20.53% MHD, and 54.67% HHD
- Business Park: 24.71% LHD, 20.62% MHD, and 54.67% HHD

The estimated emissions resulting from vehicle operations are summarized in Table 3-1 (presented later in this report). Detailed emission calculations are provided in Appendix 3.1.

### **3.5.4 SOLID WASTE**

Industrial land uses will result in the generation and disposal of solid waste. A large percentage of this waste will be diverted from landfills by a variety of means, such as reducing the amount of waste generated, recycling, and/or composting. The remainder of the waste not diverted will be disposed of at a landfill. GHG emissions from landfills are associated with the anaerobic breakdown of material. GHG emissions associated with the disposal of solid waste associated with the proposed Project were calculated by the CalEEMod™ model using default parameters.

### **3.5.5 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. Water demand rates from the City of Chino Water Supply Assessment, Subarea 2-Chino Sphere of Influence, Water Master Map, and City of Chino Urban Water Management Plan were utilized. The WSA determined 1,250 gallons per day per acre (gpd/ac).

### **3.5.6 ON-SITE EQUIPMENT EMISSIONS**

It is common for an industrial warehouse project to require cargo handling equipment to move empty containers and empty chassis to and from the various pieces of cargo handling equipment that receive and distribute containers. The most common type of cargo handling



equipment is the yard truck which is designed for moving cargo containers. Yard trucks are also known as yard goats, utility tractors (UTRs), hustlers, yard hostlers, and yard tractors.

As part of the Project's design, all on-site outdoor cargo handling equipment (CHE) (including yard trucks, hostlers, yard goats, pallet jacks, forklifts, and other on-site equipment) and all on-site indoor forklifts will be powered by electricity. Since there is no exhaust associated with the operation of the yard tractors and forklifts, for the purposes of this analysis, no on-site equipment was modeled. Notwithstanding, since the indirect electricity consumption from on-site equipment may not be accounted for by the default CalEEMod calculations for energy demand, as a conservative measure, 25% of the energy demand calculated by CalEEMod is assumed to be required for on-site equipment operations.

### 3.6 EMISSIONS SUMMARY

The Project will result in approximately 3,516.92 MTCO<sub>2</sub>e per year from construction, area, energy, waste, and water usage. In addition, the Project has the potential to result in an additional 39,310.68 MTCO<sub>2</sub>e per year from mobile sources if the assumption is made that all of the vehicle trips to and from the Project are "new" trips resulting from the development of the Project. As shown on Table 3-1, the Project has the potential to generate a total of approximately 42,827.60 MTCO<sub>2</sub>e per year. As such, the Project would not exceed the SCAQMD's numeric threshold of 10,000 MTCO<sub>2</sub>e if it were applied. Thus, the Project would not have the potential to result in a cumulatively considerable impact with respect to GHG emissions.

**TABLE 3-1: PROJECT GREENHOUSE GAS EMISSIONS (ANNUAL)**

Emission Source	Emissions (metric tons per year)			
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total CO <sub>2</sub> E
Annual construction-related emissions amortized over 30 years	82.04	0.02	0.00	82.47
Area	0.03	0.00	0.00	0.03
Energy from Building Envelope	2,559.04	0.09	0.03	2,569.78
Energy from On-Site Equipment	121.01	0.04	0.00	121.99
Mobile (Trucks)	30,541.68	0.96	0.00	30,565.56
Mobile (Passenger Cars)	8,740.67	0.18	0.00	8,745.11
Waste	265.59	15.70	0.00	657.99
Water Usage	70.06	0.45	0.01	84.65
<b>Total CO<sub>2</sub>E (All Sources)</b>	<b>42,827.60</b>			

### 3.7 GREENHOUSE GAS EMISSIONS FINDINGS AND RECOMMENDATIONS

***GHG Impact #1: The Project would generate direct or indirect greenhouse gas emission that would result in a significant impact on the environment.***

The Project will result in approximately 3,516.92 MTCO<sub>2</sub>e per year from construction, area, energy, waste, and water usage. In addition, the Project has the potential to result in an additional 39,310.68 MTCO<sub>2</sub>e per year from mobile sources if the assumption is made that all of the vehicle trips to and from the Project are “new” trips resulting from the development of the Project. As shown on Table 3-1, the Project has the potential to generate a total of approximately 42,827.60 MTCO<sub>2</sub>e per year. Notwithstanding, an individual project cannot generate enough GHG emissions to influence global climate change. The project participates in this potential impact by its incremental contribution combined with the cumulative increase of all other sources of GHGs, which when taken together may have a significant impact on global climate change. Because the City’s CAP addresses GHG emissions reduction, is in concert with AB 32 and international efforts to address global climate change, and includes specific local requirements that will substantially lessen the cumulative problem, compliance with the CAP fulfills the description of mitigation found in CEQA Guidelines §15130(a)(3) and §15183.5.

As substantiated herein, the proposed Project would be consistent with the CAP, would be in concert with AB 32 and international efforts to address global climate change, and would reflect specific local requirements that would substantially lessen cumulative GHG emissions impacts. The proposed Project would therefore also fulfill the description of mitigation found in CEQA Guidelines §15130(a)(3) and §15183.5. The Project’s incremental contribution to GHG emissions impacts would therefore not be cumulatively considerable.

***GHG Impact #2: The Project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.***

The Project’s consistency with AB 32 and SB 32 are discussed below.

#### **Scoping Plan**

ARB’s *Scoping Plan* identifies strategies to reduce California’s greenhouse gas emissions in support of AB32 which requires the State to reduce its GHG emissions to 1990 levels by 2020. Many of the strategies identified in the Scoping Plan are not applicable at the project level, such as long-term technological improvements to reduce emissions from vehicles. Some measures are applicable and supported by the project, such as energy efficiency. Finally, while some measures are not directly applicable, the project would not conflict with their implementation. Reduction measures are grouped into 18 action categories, as follows:

1. **California Cap-and-Trade Program Linked to Western Climate Initiative Partner Jurisdictions.**  
Implement a broad-based California cap-and-trade program to provide a firm limit on emissions. Link the California cap-and-trade program with other Western Climate Initiative Partner programs to create a regional market system to achieve greater environmental and economic

benefits for California.<sup>5</sup> Ensure California's program meets all applicable AB 32 requirements for market-based mechanisms.

2. **California Light-Duty Vehicle Greenhouse Gas Standards.** Implement adopted Pavley standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and vehicle technology programs with long-term climate change goals.
3. **Energy Efficiency.** Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts including new technologies, and new policy and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California (including both investor-owned and publicly owned utilities).
4. **Renewables Portfolio Standards.** Achieve 33 percent renewable energy mix statewide.
5. **Low Carbon Fuel Standard.** Develop and adopt the Low Carbon Fuel Standard.
6. **Regional Transportation-Related Greenhouse Gas Targets.** Develop regional greenhouse gas emissions reduction targets for passenger vehicles.
7. **Vehicle Efficiency Measures.** Implement light-duty vehicle efficiency measures.
8. **Goods Movement.** Implement adopted regulations for the use of shore power for ships at berth. Improve efficiency in goods movement activities.
9. **Million Solar Roofs Program.** Install 3,000 megawatts of solar-electric capacity under California's existing solar programs.
10. **Medium- and Heavy-Duty Vehicles.** Adopt medium- (MD) and heavy-duty (HD) vehicle efficiencies. Aerodynamic efficiency measures for HD trucks pulling trailers 53-feet or longer that include improvements in trailer aerodynamics and use of rolling resistance tires were adopted in 2008 and went into effect in 2010.<sup>6</sup> Future, yet to be determined improvements, includes hybridization of MD and HD trucks.
11. **Industrial Emissions.** Require assessment of large industrial sources to determine whether individual sources within a facility can cost-effectively reduce greenhouse gas emissions and provide other pollution reduction co-benefits. Reduce greenhouse gas emissions from fugitive emissions from oil and gas extraction and gas transmission. Adopt and implement regulations to control fugitive methane emissions and reduce flaring at refineries.
12. **High Speed Rail.** Support implementation of a high speed rail system.
13. **Green Building Strategy.** Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.
14. **High Global Warming Potential Gases.** Adopt measures to reduce high warming global potential gases.
15. **Recycling and Waste.** Reduce methane emissions at landfills. Increase waste diversion, composting and other beneficial uses of organic materials, and mandate commercial recycling. Move toward zero-waste.
16. **Sustainable Forests.** Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation. The 2020 target for carbon sequestration is 5 million MTCO<sub>2</sub>E/YR.

<sup>5</sup> California Air Resources Board. California GHG Emissions – Forecast (2002-2020). October 2010

<sup>6</sup> California Air Resources Board. Scoping Plan Measures Implementation Timeline. October 2010

17. **Water.** Continue efficiency programs and use cleaner energy sources to move and treat water.

18. **Agriculture.** In the near-term, encourage investment in manure digesters and at the five-year Scoping Plan update determine if the program should be made mandatory by 2020.

Table 3-2 summarizes the project's consistency with the State Scoping Plan. As summarized, the project will not conflict with any of the provisions of the Scoping Plan and in fact supports seven of the action categories through energy efficiency, water conservation, recycling, and landscaping.

**TABLE 3-2: SCOPING PLAN CONSISTENCY SUMMARY**

Action	Supporting Measures <sup>7</sup>	Consistency
Cap-and-Trade Program	--	Not Applicable. These programs involve capping emissions from electricity generation, industrial facilities, and broad scoped fuels. Caps do not directly affect manufacturing projects.
Light-Duty Vehicle Standards	T-1	Not Applicable. This is a statewide measure establishing vehicle emissions standards.
Energy Efficiency	E-1	Consistent. The project will include a variety of building, water, and solid waste efficiencies consistent with 2016 CALGREEN requirements.
	E-2	
	CR-1	
	CR-2	
Renewables Portfolio Standard	E-3	Not Applicable. Establishes the minimum statewide renewable energy mix.
Low Carbon Fuel Standard	T-2	Not Applicable. Establishes reduced carbon intensity of transportation fuels.
Regional Transportation-Related Greenhouse Gas Targets	T-3	Not Applicable. This is a statewide measure and is not within the purview of this Project.
Vehicle Efficiency Measures	T-4	Not Applicable. Identifies measures such as minimum tire-fuel efficiency, lower friction oil, and reduction in air conditioning use.
Goods Movement	T-5	Not applicable. Identifies measures to improve goods movement efficiencies such as advanced combustion strategies, friction reduction, waste heat recovery, and electrification of accessories. While these measures are yet to be implemented and will be voluntary, the proposed Project would not interfere with their implementation.
	T-6	

<sup>7</sup> Supporting measures can be found at the following link: [http://www.arb.ca.gov/cc/scopingplan/2013\\_update/appendix\\_b.pdf](http://www.arb.ca.gov/cc/scopingplan/2013_update/appendix_b.pdf)

Action	Supporting Measures <sup>7</sup>	Consistency
Million Solar Roofs (MSR) Program	E-4	Not applicable. The MSR program sets a goal for use of solar systems throughout the state as a whole. The project currently does not include solar energy generation, and it is unknown if the building roof structure will be designed to support solar panels in the future.
Medium- & Heavy-Duty Vehicles	T-7	Not applicable. MD and HD trucks and trailers working from the proposed parcel delivery facility will be subject to aerodynamic and hybridization requirements as established by ARB; no feature of the project would interfere with implementation of these requirements and programs.
	T-8	
Industrial Emissions	I-1	Not Applicable. These measures are applicable to large industrial facilities (> 500,000 MTCOE2/YR) and other intensive uses such as refineries.
	I-2	
	I-3	
	I-4	
	I-5	
High Speed Rail	T-9	Not Applicable. Supports increased mobility choice.
Green Building Strategy	GB-1	Consistent. The project will include a variety of building, water, and solid waste efficiencies consistent with 2016 CALGREEN requirements.
High Global Warming Potential Gases	H-1	Not Applicable. The proposed parcel delivery facility is not substantial sources of high GWP emissions and will comply with any future changes in air conditioning, fire protection suppressant, and other requirements.
	H-2	
	H-3	
	H-4	
	H-5	
	H-6	
	H-7	
Recycling and Waste	RW-1	Consistent. The project will be required recycle a minimum of 50 percent from construction activities and parcel delivery operations per State and County requirements.
	RW-2	
	RW-3	
Sustainable Forests	F-1	Consistent. The project will increase carbon sequestration by increasing on-site trees per the project landscaping plan.
Water	W-1	Consistent. The project will include use of low-flow fixtures and efficient landscaping per State requirements.
	W-2	
	W-3	
	W-4	
	W-5	
	W-6	
Agriculture	A-1	Not Applicable. The project is not an agricultural use.

**SB 32**

At the state level, Executive Orders S-3-05 and B-30-15 are orders from the State's Executive Branch for the purpose of reducing GHG emissions. The goal of Executive Order S-3-05 is to reduce GHG emissions to 1990 levels by 2020 was codified by the Legislature as the 2006 Global Warming Solutions Act (AB 32). The Project, as analyzed above, is consistent with AB 32. Therefore, the Project does not conflict with this component of Executive Order S-3-05. The Executive Orders also establish goals to reduce GHG emissions to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. However, studies have shown that, in order to meet the 2030 and 2050 targets, aggressive technologies in the transportation and energy sectors, including electrification and the decarbonization of fuel, will be required. In its Climate Change Scoping Plan, ARB acknowledged that the "measures needed to meet the 2050 are too far in the future to define in detail." In the First Scoping Plan Update, however, ARB generally described the type of activities required to achieve the 2050 target: "energy demand reduction through efficiency and activity changes; largescale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and rapid market penetration of efficiency and clean energy technologies that requires significant efforts to deploy and scale markets for the cleanest technologies immediately."

Unlike the 2020 and 2030 reduction targets of AB 32 and SB 32, respectively the 2050 target of Executive Order S-3-05 has not been codified. Accordingly, the 2050 reduction target has not been the subject of any analysis by CARB. For example, CARB has not prepared an update to the aforementioned Scoping Plan that provides guidance to local agencies as to how they may seek to contribute to the achievement of the 2050 reduction target.

In 2017, the California Supreme Court examined the need to use the Executive Order S-3-05 2050 reduction target in *Cleveland National Forest Foundation v. San Diego Association of Governments* (2017) 3 Cal.5th 497 (Cleveland National). The case arose from SANDAG's adoption of its 2050 Regional Transportation Plan, which included its Sustainable Communities Strategy, as required by SB 375 (discussed above). On review, the Supreme Court held that SANDAG did not violate CEQA by not considering the Executive Order S-3-05 2050 reduction target.

As explained above, the 2050 reduction target of Executive Order S-3-05 has not been codified, unlike the 2020 and 2030 reduction targets of AB 32 and SB 32, respectively. Accordingly, the 2050 reduction target has not been the subject of any analysis by CARB. For example, CARB has not prepared an update to the aforementioned Scoping Plan that provides guidance to local agencies as to how they may seek to contribute to the achievement of the 2050 reduction target.

Further, the Project is much smaller in size and scope in comparison to the Regional Transportation Plan examined in *Cleveland National*. In that case, the California Supreme Court held that SANDAG did not violate CEQA by not considering the Executive Order S-3-05 2050 reduction target. Accordingly, there is no information presently available to assess the Project's consistency with regard to the 2050 target of Executive Order S-3-05.

The 2017 Scoping Plan builds on the 2008 Scoping Plan in order to achieve the 40 percent reduction from 1990 levels by 2030. Major elements of the 2017 Scoping Plan framework that will achieve the GHG reductions include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing ZEV buses and trucks. When adopted, this measure would apply to all trucks accessing the Project site, this may include existing trucks or new trucks purchased by the project proponent could be eligible for incentives that expedite the Project's implementation of ZEVs.
- Low Carbon Fuel Standard (LCFS), with an increased stringency (18 percent by 2030). When adopted, this measure would apply to all fuel purchased and used by the Project in the state.
- Implementing SB 350, which expands the Renewables Portfolio Standard (RPS) to 50 percent RPS and doubles energy efficiency savings by 2030. When adopted, this measure would apply when electricity is provided to the Project by a utility company.
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks. When adopted, this measure would apply to all trucks accessing the Project site, this may include existing trucks or new trucks that are part of the statewide goods movement sector.
- Implementing the proposed Short-Lived Climate Pollutant Strategy (SLPS), which focuses on reducing methane and hydrofluorocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030. When adopted, the Project would be required to comply with this measure and reduce SLPS accordingly.
- Continued implementation of SB 375. The Project is not within the purview of SB 375 and would therefore not conflict with this measure.
- Post-2020 Cap-and-Trade Program that includes declining caps. When adopted, the Project would be required to comply with the Cap-and-Trade Program if it generates emissions from sectors covered by Cap-and-Trade.
- 20 percent reduction in GHG emissions from refineries by 2030. When adopted, the Project would be required to comply with this measure if it were to utilize any fuel from refineries.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink. This is a statewide measure that would not apply to the Project.

As shown above, the Project would not conflict with any of the 2017 Scoping Plan elements as any regulations adopted would apply directly or indirectly to the Project.

Further, recent studies show that the State's existing and proposed regulatory framework will allow the State to reduce its GHG emissions level to 40 percent below 1990 levels by 2030.

## 4 FINDINGS & CONCLUSIONS

The City adopted The Chino Climate Action Plan and Plan Implementing Measures, effective in full force as of January 2, 2014 (collectively, the CAP). Under the CAP, the City of Chino selected a goal to reduce its community GHG emissions to a level that is 15 percent below its 2008 GHG emissions levels by 2020 which is generally consistent with AB 32 and recommended in the AB 32 Scoping Plan. In order to fulfill this commitment, GHG emissions-reducing development and performance standards have been established under the Chino CAP as codified at Chino Municipal Code Chapter 15.45 – Climate Action Plan Implementation.

The Project would comply with applicable provisions of Chino Municipal Code Chapter 15.45 – Climate Action Plan Implementation. More specifically, development within the Project site would be required to conform to “Option 1” of Chino Municipal Code Chapter 15.45 which states: “Exceed by 3% the mandatory California Energy Code Title 24, Part 6 standards, in effect at the time of development application submittal for discretionary review.” It should be noted in fact that the Project as part of its design will exceed the mandatory Title 24 requirements by 3% which meets the 3% target reduction established by the City of Chino.

Furthermore, the Project will result in approximately 3,516.92 MTCO<sub>2</sub>e per year from construction, area, energy, waste, water usage, and on-site equipment. In addition, the Project has the potential to result in an additional 39,310.68 MTCO<sub>2</sub>e per year from mobile sources if the assumption is made that all of the vehicle trips to and from the Project are “new” trips resulting from the development of the Project. As such, the Project has the potential to generate a total of approximately 42,827.60 MTCO<sub>2</sub>e per year. Notwithstanding, an individual project cannot generate enough GHG emissions to influence global climate change. The project participates in this potential impact by its incremental contribution combined with the cumulative increase of all other sources of GHGs, which when taken together may have a significant impact on global climate change. Because the City’s CAP addresses GHG emissions reduction, is in concert with AB 32 and international efforts to address global climate change, and includes specific local requirements that will substantially lessen the cumulative problem, compliance with the CAP fulfills the description of mitigation found in *CEQA Guidelines* §15130(a)(3) and §15183.5.

As substantiated herein, the proposed Project would be consistent with the CAP, would be in concert with AB 32 and international efforts to address global climate change, and would reflect specific local requirements that would substantially lessen cumulative GHG emissions impacts. The proposed Project would therefore also fulfill the description of mitigation found in *CEQA Guidelines* §15130(a)(3) and §15183.5. The Project’s incremental contribution to GHG emissions impacts would therefore not be cumulatively considerable.



**TABLE 4-1: PROJECT GREENHOUSE GAS EMISSIONS (ANNUAL)**

Emission Source	Emissions (metric tons per year)			
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total CO <sub>2</sub> E
Annual construction-related emissions amortized over 30 years	82.04	0.02	0.00	82.47
Area	0.03	0.00	0.00	0.03
Energy from Building Envelope	2,559.04	0.09	0.03	2,569.78
Energy from On-Site Equipment	121.01	0.04	0.00	121.99
Mobile (Trucks)	30,541.68	0.96	0.00	30,565.56
Mobile (Passenger Cars)	8,740.67	0.18	0.00	8,745.11
Waste	265.59	15.70	0.00	657.99
Water Usage	70.06	0.45	0.01	84.65
<b>Total CO<sub>2</sub>E (All Sources)</b>	<b>42,827.60</b>			

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## 6 CERTIFICATION

The contents of this GHGA represent an accurate depiction of the greenhouse gas impacts associated with the proposed Altitude Business Center Project. The information contained in this greenhouse gas report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5987.

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### EDUCATION

Master of Science in Environmental Studies  
California State University, Fullerton • May, 2010

Bachelor of Arts in Environmental Analysis and Design  
University of California, Irvine • June, 2006

### PROFESSIONAL AFFILIATIONS

AEP – Association of Environmental Planners  
AWMA – Air and Waste Management Association  
ASTM – American Society for Testing and Materials

### PROFESSIONAL CERTIFICATIONS

Environmental Site Assessment – American Society for Testing and Materials • June, 2013  
Planned Communities and Urban Infill – Urban Land Institute • June, 2011  
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April, 2008  
Principles of Ambient Air Monitoring – California Air Resources Board • August, 2007  
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Air Dispersion Modeling – Lakes Environmental • June, 2006

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**APPENDIX 3.1:**

**CALEEMOD EMISSIONS MODEL OUTPUTS**

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

**Altitude Business Centre (Trucks)**  
**San Bernardino-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	233.00	1000sqft	5.35	233,000.00	0
General Light Industry	255.00	1000sqft	5.85	255,000.00	0
Unrefrigerated Warehouse-No Rail	715.00	1000sqft	16.41	715,000.00	0
Mini-Storage	110.00	1000sqft	2.53	110,000.00	0

### 1.2 Other Project Characteristics

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	32
<b>Climate Zone</b>	10			<b>Operational Year</b>	2020
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MW hr)</b>	702.44	<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



## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

Project Characteristics -

Land Use -

Construction Phase - Operations (Passenger Car) Run Only.

Off-road Equipment - Operations (Passenger Car) Run Only.

Vehicle Trips - Trip Rates based on ITE 9th Edition (2012) and TIA Report prepared by Urban Crossroads (2017). Operations (Passenger Car) Run Only.

Fleet Mix - Operations (Passenger Car) Run Only.

Architectural Coating -

Area Coating - Operationas (Truck) Run Only.

Energy Use - Title-24 Electricity Energy Intensity and Title-24 Natural Gas Energy Intensity were adjusted by 21.8% and 16.8% respectively, to reflect 2013 Title 24 requirements. Source: Impact Analysis California's 2013 Building Energy Efficiency Standards (CEC 2013)

Water And Wastewater - Based on similar industrial projects and the 2004 City Water Master Plan Update- 1,250 gallons per day

Operational Off-Road Equipment - Included Yard Tractors

Area Mitigation - Based on Rule 1113

Energy Mitigation - Compliance with City of Chino CAP

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	656500	0
tblAreaCoating	Area_Nonresidential_Interior	1969500	0
tblEnergyUse	T24E	2.20	1.72
tblEnergyUse	T24E	3.07	2.40
tblEnergyUse	T24E	0.37	0.29
tblEnergyUse	T24E	0.37	0.29
tblEnergyUse	T24NG	15.36	12.78
tblEnergyUse	T24NG	3.47	2.89
tblEnergyUse	T24NG	2.00	1.66
tblEnergyUse	T24NG	2.00	1.66
tblFleetMix	HHD	0.06	0.44
tblFleetMix	HHD	0.06	0.54

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

tblFleetMix	HHD	0.06	0.60
tblFleetMix	HHD	0.06	0.54
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.02	0.38
tblFleetMix	LHD1	0.02	0.25
tblFleetMix	LHD1	0.02	0.17
tblFleetMix	LHD1	0.02	0.25
tblFleetMix	LHD2	5.4600e-003	0.00
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tblFleetMix	LHD2	5.4600e-003	0.00
tblFleetMix	LHD2	5.4600e-003	0.00
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tblFleetMix	MCY	6.1170e-003	0.00
tblFleetMix	MCY	6.1170e-003	0.00
tblFleetMix	MCY	6.1170e-003	0.00
tblFleetMix	MDV	0.12	0.00

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

tblFleetMix	MDV	0.12	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	1.0820e-003	0.00
tblFleetMix	MH	1.0820e-003	0.00
tblFleetMix	MH	1.0820e-003	0.00
tblFleetMix	MH	1.0820e-003	0.00
tblFleetMix	MHD	0.02	0.18
tblFleetMix	MHD	0.02	0.21
tblFleetMix	MHD	0.02	0.23
tblFleetMix	MHD	0.02	0.21
tblFleetMix	OBUS	1.3370e-003	0.00
tblFleetMix	OBUS	1.3370e-003	0.00
tblFleetMix	OBUS	1.3370e-003	0.00
tblFleetMix	OBUS	1.3370e-003	0.00
tblFleetMix	SBUS	8.1700e-004	0.00
tblFleetMix	SBUS	8.1700e-004	0.00
tblFleetMix	SBUS	8.1700e-004	0.00
tblFleetMix	SBUS	8.1700e-004	0.00
tblFleetMix	UBUS	1.6570e-003	0.00
tblFleetMix	UBUS	1.6570e-003	0.00
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tblFleetMix	UBUS	1.6570e-003	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

tblOperationalOffRoadEquipment	OperFuelType	Diesel	CNG
tblOperationalOffRoadEquipment	OperHorsePower	124.00	200.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	4.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
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tblVehicleTrips	CW_TL	16.60	50.00
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tblVehicleTrips	CW_TTP	59.00	100.00
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tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	DV_TP	5.00	0.00

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

tblVehicleTrips	DV_TP	19.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	77.00	100.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.32	1.49
tblVehicleTrips	ST_TR	2.46	1.62
tblVehicleTrips	ST_TR	1.68	0.73
tblVehicleTrips	ST_TR	1.68	0.38
tblVehicleTrips	SU_TR	0.68	1.49
tblVehicleTrips	SU_TR	1.05	1.62
tblVehicleTrips	SU_TR	1.68	0.73
tblVehicleTrips	SU_TR	1.68	0.38
tblVehicleTrips	WD_TR	6.97	1.49
tblVehicleTrips	WD_TR	11.03	1.62
tblVehicleTrips	WD_TR	1.68	0.73
tblVehicleTrips	WD_TR	1.68	0.38
tblWater	IndoorWaterUseRate	58,968,750.00	2,669,062.50
tblWater	IndoorWaterUseRate	41,411,963.28	2,440,937.50
tblWater	IndoorWaterUseRate	165,343,750.00	7,487,062.50
tblWater	IndoorWaterUseRate	25,437,500.00	155,235.95

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

tblWater	OutdoorWaterUseRate	25,381,525.88	2,440,937.50
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## 2.0 Emissions Summary

## 2.1 Overall Construction

### Unmitigated Construction

[illegible]

### Mitigated Construction

[illegible]

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

	ROG	NOx	CO	SO2	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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

## 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	4.7461	1.6000e-004	0.0169	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0326	0.0326	9.0000e-005	0.0000	0.0348
Energy	0.0523	0.4754	0.3993	2.8500e-003		0.0361	0.0361		0.0361	0.0361	0.0000	2,559.4038	2,559.4038	0.0942	0.0269	2,569.7840
Mobile	2.8156	86.7498	22.3408	0.3198	10.5135	0.5809	11.0944	2.9691	0.5556	3.5247	0.0000	30,541.6831	30,541.6831	0.9552	0.0000	30,565.5636
Offroad	0.0627	0.7295	0.3346	1.3800e-003		0.0244	0.0244		0.0225	0.0225	0.0000	121.0135	121.0135	0.0391	0.0000	121.9920
Waste						0.0000	0.0000		0.0000	0.0000	265.5914	0.0000	265.5914	15.6960	0.0000	657.9913
Water						0.0000	0.0000		0.0000	0.0000	4.0457	61.5470	65.5927	0.4181	0.0103	79.1251
<b>Total</b>	<b>7.6767</b>	<b>87.9548</b>	<b>23.0915</b>	<b>0.3240</b>	<b>10.5135</b>	<b>0.6415</b>	<b>11.1550</b>	<b>2.9691</b>	<b>0.6142</b>	<b>3.5833</b>	<b>269.6371</b>	<b>33,283.6799</b>	<b>33,553.3170</b>	<b>17.2027</b>	<b>0.0373</b>	<b>33,994.4907</b>

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

**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	4.7461	1.6000e-004	0.0169	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0326	0.0326	9.0000e-005	0.0000	0.0348
Energy	0.0514	0.4676	0.3927	2.8100e-003		0.0355	0.0355		0.0355	0.0355	0.0000	2,539.0902	2,539.0902	0.0936	0.0267	2,549.3776
Mobile	2.8156	86.7498	22.3408	0.3198	10.5135	0.5809	11.0944	2.9691	0.5556	3.5247	0.0000	30,541.6831	30,541.6831	0.9552	0.0000	30,565.5636
Offroad	0.0627	0.7295	0.3346	1.3800e-003		0.0244	0.0244		0.0225	0.0225	0.0000	121.0135	121.0135	0.0391	0.0000	121.9920
Waste						0.0000	0.0000		0.0000	0.0000	265.5914	0.0000	265.5914	15.6960	0.0000	657.9913
Water						0.0000	0.0000		0.0000	0.0000	4.0457	61.5470	65.5927	0.4181	0.0103	79.1251
<b>Total</b>	<b>7.6759</b>	<b>87.9470</b>	<b>23.0850</b>	<b>0.3240</b>	<b>10.5135</b>	<b>0.6409</b>	<b>11.1544</b>	<b>2.9691</b>	<b>0.6136</b>	<b>3.5827</b>	<b>269.6371</b>	<b>33,263.3664</b>	<b>33,533.0034</b>	<b>17.2021</b>	<b>0.0370</b>	<b>33,974.0844</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>0.01</b>	<b>0.01</b>	<b>0.03</b>	<b>0.01</b>	<b>0.00</b>	<b>0.09</b>	<b>0.01</b>	<b>0.00</b>	<b>0.10</b>	<b>0.02</b>	<b>0.00</b>	<b>0.06</b>	<b>0.06</b>	<b>0.00</b>	<b>0.70</b>	<b>0.06</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	Demolition	Demolition	3/1/2018	4/11/2018	5	30	



## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

**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; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	0	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40

**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	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

### 3.2 Demolition - 2018

### Unmitigated Construction On-Site

[illegible]

### Unmitigated Construction Off-Site

[illegible]

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

**3.2 Demolition - 2018****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	0.0000	0.0000	0.0000	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>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**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	0.0000	0.0000	0.0000	0.0000	0.0000	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>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**4.0 Operational Detail - Mobile**

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

## 4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.8156	86.7498	22.3408	0.3198	10.5135	0.5809	11.0944	2.9691	0.5556	3.5247	0.0000	30,541.68 31	30,541.68 31	0.9552	0.0000	30,565.56 36
Unmitigated	2.8156	86.7498	22.3408	0.3198	10.5135	0.5809	11.0944	2.9691	0.5556	3.5247	0.0000	30,541.68 31	30,541.68 31	0.9552	0.0000	30,565.56 36

## 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	380.46	380.46	380.46	6,924,372	6,924,372
General Office Building	376.30	376.30	376.30	6,848,569	6,848,569
Unrefrigerated Warehouse-No Rail	521.95	521.95	521.95	9,499,490	9,499,490
Mini-Storage	41.80	41.80	41.80	760,760	760,760
Total	1,320.51	1,320.51	1,320.51	24,033,191	24,033,191

## 4.3 Trip Type Information

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

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 Light Industry	50.00	0.00	0.00	100.00	0.00	0.00	100	0	0
General Office Building	50.00	0.00	0.00	100.00	0.00	0.00	100	0	0
Unrefrigerated Warehouse-No Rail	50.00	0.00	0.00	100.00	0.00	0.00	100	0	0
Mini-Storage	50.00	0.00	0.00	100.00	0.00	0.00	100	0	0

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.000000	0.000000	0.000000	0.000000	0.380000	0.000000	0.180000	0.440000	0.000000	0.000000	0.000000	0.000000	0.000000
General Office Building	0.000000	0.000000	0.000000	0.000000	0.250000	0.000000	0.210000	0.540000	0.000000	0.000000	0.000000	0.000000	0.000000
Unrefrigerated Warehouse-No Rail	0.000000	0.000000	0.000000	0.000000	0.170000	0.000000	0.230000	0.600000	0.000000	0.000000	0.000000	0.000000	0.000000
Mini-Storage	0.000000	0.000000	0.000000	0.000000	0.250000	0.000000	0.210000	0.540000	0.000000	0.000000	0.000000	0.000000	0.000000

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

Exceed Title 24

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,030.1049	2,030.1049	0.0838	0.0173	2,037.3676
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,041.9268	2,041.9268	0.0843	0.0174	2,049.2319
NaturalGas Mitigated	0.0514	0.4676	0.3927	2.8100e-003		0.0355	0.0355		0.0355	0.0355	0.0000	508.9854	508.9854	9.7600e-003	9.3300e-003	512.0100
Mini-Storage	0.0523	0.4754	0.3993	2.8500e-003		0.0361	0.0361		0.0361	0.0361	0.0000	517.4770	517.4770	9.9200e-003	9.4900e-003	520.5521

## 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 Light Industry	7.62692e+006	0.0411	0.3739	0.3141	2.2400e-003		0.0284	0.0284		0.0284	0.0284	0.0000	407.0016	407.0016	7.8000e-003	7.4600e-003	409.4202
General Office Building	672680	3.6300e-003	0.0330	0.0277	2.0000e-004		2.5100e-003	2.5100e-003		2.5100e-003	2.5100e-003	0.0000	35.8968	35.8968	6.9000e-004	6.6000e-004	36.1101
Unrefrigerated Warehouse-No Rail	1.21121e+006	6.5300e-003	0.0594	0.0499	3.6000e-004		4.5100e-003	4.5100e-003		4.5100e-003	4.5100e-003	0.0000	64.6348	64.6348	1.2400e-003	1.1800e-003	65.0189
Mini-Storage	186340	1.0000e-003	9.1300e-003	7.6700e-003	5.0000e-005		6.9000e-004	6.9000e-004		6.9000e-004	6.9000e-004	0.0000	9.9438	9.9438	1.9000e-004	1.8000e-004	10.0029
<b>Total</b>		<b>0.0523</b>	<b>0.4753</b>	<b>0.3993</b>	<b>2.8500e-003</b>		<b>0.0361</b>	<b>0.0361</b>		<b>0.0361</b>	<b>0.0361</b>	<b>0.0000</b>	<b>517.4770</b>	<b>517.4770</b>	<b>9.9200e-003</b>	<b>9.4800e-003</b>	<b>520.5521</b>

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

**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 Light Industry	7.52916e+006	0.0406	0.3691	0.3100	2.2100e-003		0.0281	0.0281		0.0281	0.0281	0.0000	401.7846	401.7846	7.7000e-003	7.3700e-003	404.1722
General Office Building	652500	3.5200e-003	0.0320	0.0269	1.9000e-004		2.4300e-003	2.4300e-003		2.4300e-003	2.4300e-003	0.0000	34.8199	34.8199	6.7000e-004	6.4000e-004	35.0268
Unrefrigerated Warehouse-No Rail	1.17552e+006	6.3400e-003	0.0576	0.0484	3.5000e-004		4.3800e-003	4.3800e-003		4.3800e-003	4.3800e-003	0.0000	62.7301	62.7301	1.2000e-003	1.1500e-003	63.1029
Mini-Storage	180849	9.8000e-004	8.8700e-003	7.4500e-003	5.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004	0.0000	9.6508	9.6508	1.8000e-004	1.8000e-004	9.7081
<b>Total</b>		<b>0.0514</b>	<b>0.4676</b>	<b>0.3927</b>	<b>2.8000e-003</b>		<b>0.0355</b>	<b>0.0355</b>		<b>0.0355</b>	<b>0.0355</b>	<b>0.0000</b>	<b>508.9853</b>	<b>508.9853</b>	<b>9.7500e-003</b>	<b>9.3400e-003</b>	<b>512.0100</b>

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

**5.3 Energy by Land Use - Electricity****Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	2.46595e+006	785.7051	0.0324	6.7100e-003	788.5160
General Office Building	2.06222e+006	657.0682	0.0271	5.6100e-003	659.4189
Unrefrigerated Warehouse-No Rail	1.62973e+006	519.2663	0.0214	4.4400e-003	521.1240
Mini-Storage	250727	79.8871	3.3000e-003	6.8000e-004	80.1729
<b>Total</b>		<b>2,041.9268</b>	<b>0.0843</b>	<b>0.0174</b>	<b>2,049.2319</b>



## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

**5.3 Energy by Land Use - Electricity****Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	2.45279e+006	781.5117	0.0323	6.6800e-003	784.3076
General Office Building	2.04544e+006	651.7214	0.0269	5.5700e-003	654.0530
Unrefrigerated Warehouse-No Rail	1.62352e+006	517.2888	0.0214	4.4200e-003	519.1394
Mini-Storage	249773	79.5829	3.2900e-003	6.8000e-004	79.8676
<b>Total</b>		<b>2,030.1048</b>	<b>0.0838</b>	<b>0.0174</b>	<b>2,037.3676</b>

**6.0 Area Detail****6.1 Mitigation Measures Area**

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.7461	1.6000e-004	0.0169	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0326	0.0326	9.0000e-005	0.0000	0.0348
Unmitigated	4.7461	1.6000e-004	0.0169	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0326	0.0326	9.0000e-005	0.0000	0.0348

## 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	4.7445					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.5900e-003	1.6000e-004	0.0169	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0326	0.0326	9.0000e-005	0.0000	0.0348
<b>Total</b>	<b>4.7461</b>	<b>1.6000e-004</b>	<b>0.0169</b>	<b>0.0000</b>		<b>6.0000e-005</b>	<b>6.0000e-005</b>		<b>6.0000e-005</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>0.0326</b>	<b>0.0326</b>	<b>9.0000e-005</b>	<b>0.0000</b>	<b>0.0348</b>

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

**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	4.7445					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.5900e-003	1.6000e-004	0.0169	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0326	0.0326	9.0000e-005	0.0000	0.0348
<b>Total</b>	<b>4.7461</b>	<b>1.6000e-004</b>	<b>0.0169</b>	<b>0.0000</b>		<b>6.0000e-005</b>	<b>6.0000e-005</b>		<b>6.0000e-005</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>0.0326</b>	<b>0.0326</b>	<b>9.0000e-005</b>	<b>0.0000</b>	<b>0.0348</b>

**7.0 Water Detail****7.1 Mitigation Measures Water**

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	65.5927	0.4181	0.0103	79.1251
Unmitigated	65.5927	0.4181	0.0103	79.1251

## 7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	2.66906 / 0	11.9201	0.0874	2.1500e-003	14.7460
General Office Building	2.44094 / 2.44094	19.5419	0.0803	2.0400e-003	22.1572
Unrefrigerated Warehouse-No Rail	7.48706 / 0	33.4374	0.2453	6.0300e-003	41.3643
Mini-Storage	0.155236 / 0	0.6933	5.0800e-003	1.2000e-004	0.8576
<b>Total</b>		<b>65.5927</b>	<b>0.4181</b>	<b>0.0103</b>	<b>79.1251</b>

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

**7.2 Water by Land Use****Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	2.66906 / 0	11.9201	0.0874	2.1500e-003	14.7460
General Office Building	2.44094 / 2.44094	19.5419	0.0803	2.0400e-003	22.1572
Unrefrigerated Warehouse-No Rail	7.48706 / 0	33.4374	0.2453	6.0300e-003	41.3643
Mini-Storage	0.155236 / 0	0.6933	5.0800e-003	1.2000e-004	0.8576
<b>Total</b>		<b>65.5927</b>	<b>0.4181</b>	<b>0.0103</b>	<b>79.1251</b>

**8.0 Waste Detail****8.1 Mitigation Measures Waste**

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

**Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	265.5914	15.6960	0.0000	657.9913
Unmitigated	265.5914	15.6960	0.0000	657.9913

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

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	316.2	64.1857	3.7933	0.0000	159.0175
General Office Building	216.69	43.9861	2.5995	0.0000	108.9737
Unrefrigerated Warehouse-No Rail	672.1	136.4302	8.0628	0.0000	338.0001
Mini-Storage	103.4	20.9893	1.2404	0.0000	52.0000
<b>Total</b>		<b>265.5914</b>	<b>15.6960</b>	<b>0.0000</b>	<b>657.9913</b>

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

**8.2 Waste by Land Use****Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	316.2	64.1857	3.7933	0.0000	159.0175
General Office Building	216.69	43.9861	2.5995	0.0000	108.9737
Unrefrigerated Warehouse-No Rail	672.1	136.4302	8.0628	0.0000	338.0001
Mini-Storage	103.4	20.9893	1.2404	0.0000	52.0000
<b>Total</b>		<b>265.5914</b>	<b>15.6960</b>	<b>0.0000</b>	<b>657.9913</b>

**9.0 Operational Offroad**


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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Off-Highway Tractors	2	4.00	365	200	0.44	CNG

## Altitude Business Centre (Trucks) - San Bernardino-South Coast County, Annual

**UnMitigated/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
Equipment Type	tons/yr										MT/yr					
Off-Highway Tractors	0.0627	0.7295	0.3346	1.3800e-003		0.0244	0.0244		0.0225	0.0225	0.0000	121.0135	121.0135	0.0391	0.0000	121.9920
<b>Total</b>	<b>0.0627</b>	<b>0.7295</b>	<b>0.3346</b>	<b>1.3800e-003</b>		<b>0.0244</b>	<b>0.0244</b>		<b>0.0225</b>	<b>0.0225</b>	<b>0.0000</b>	<b>121.0135</b>	<b>121.0135</b>	<b>0.0391</b>	<b>0.0000</b>	<b>121.9920</b>

**10.0 Stationary Equipment****Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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**Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**



Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

**Altitude Business Centre (Passenger Cars - Mitigated)**  
**San Bernardino-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	233.00	1000sqft	5.35	233,000.00	0
General Light Industry	255.00	1000sqft	5.85	255,000.00	0
Unrefrigerated Warehouse-No Rail	715.00	1000sqft	16.41	715,000.00	0
Mini-Storage	110.00	1000sqft	2.53	110,000.00	0

### 1.2 Other Project Characteristics

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	32
<b>Climate Zone</b>	10			<b>Operational Year</b>	2020
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MW hr)</b>	702.44	<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

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

Project Characteristics -

Land Use -

Construction Phase - Operations (Passenger Car) Run Only.

Off-road Equipment - Operations (Passenger Car) Run Only.

Vehicle Trips - Trip Rates based on ITE 9th Edition (2012) and TIA Report prepared by Urban Crossroads (2017). Operations (Passenger Car) Run Only.

Fleet Mix - Operations (Passenger Car) Run Only.

Area Coating - Operations (Passenger Cars) Run Only.

Energy Use - Title-24 Electricity Energy Intensity and Title-24 Natural Gas Energy Intensity were adjusted by 21.8% and 16.8% respectively, to reflect 2013 Title 24 requirements. Source: Impact Analysis California's 2013 Building Energy Efficiency Standards (CEC 2013)

Water And Wastewater - Based on similar industrial projects and the 2004 City Water Master Plan Update- 1,250 gallons per day

Operational Off-Road Equipment - Included Yard Tractors

Area Mitigation - Based on Rule 1113

Energy Mitigation - Compliance with City of Chino CAP

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	656500	0
tblAreaCoating	Area_Nonresidential_Interior	1969500	0
tblEnergyUse	T24E	2.20	1.72
tblEnergyUse	T24E	3.07	2.40
tblEnergyUse	T24E	0.37	0.29
tblEnergyUse	T24E	0.37	0.29
tblEnergyUse	T24NG	15.36	12.78
tblEnergyUse	T24NG	3.47	2.89
tblEnergyUse	T24NG	2.00	1.66
tblEnergyUse	T24NG	2.00	1.66
tblFleetMix	HHD	0.06	0.00
tblFleetMix	HHD	0.06	0.00
tblFleetMix	HHD	0.06	0.00

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

tblFleetMix	HHD	0.06	0.00
tblFleetMix	LDA	0.55	1.00
tblFleetMix	LDA	0.55	1.00
tblFleetMix	LDA	0.55	1.00
tblFleetMix	LDA	0.55	1.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.4600e-003	0.00
tblFleetMix	LHD2	5.4600e-003	0.00
tblFleetMix	LHD2	5.4600e-003	0.00
tblFleetMix	LHD2	5.4600e-003	0.00
tblFleetMix	MCY	6.1170e-003	0.00
tblFleetMix	MCY	6.1170e-003	0.00
tblFleetMix	MCY	6.1170e-003	0.00
tblFleetMix	MCY	6.1170e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MDV	0.12	0.00

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

tblFleetMix	MDV	0.12	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	1.0820e-003	0.00
tblFleetMix	MH	1.0820e-003	0.00
tblFleetMix	MH	1.0820e-003	0.00
tblFleetMix	MH	1.0820e-003	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	1.3370e-003	0.00
tblFleetMix	OBUS	1.3370e-003	0.00
tblFleetMix	OBUS	1.3370e-003	0.00
tblFleetMix	OBUS	1.3370e-003	0.00
tblFleetMix	SBUS	8.1700e-004	0.00
tblFleetMix	SBUS	8.1700e-004	0.00
tblFleetMix	SBUS	8.1700e-004	0.00
tblFleetMix	SBUS	8.1700e-004	0.00
tblFleetMix	UBUS	1.6570e-003	0.00
tblFleetMix	UBUS	1.6570e-003	0.00
tblFleetMix	UBUS	1.6570e-003	0.00
tblFleetMix	UBUS	1.6570e-003	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00
tblOperationalOffRoadEquipment	OperFuelType	Diesel	CNG

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

tblOperationalOffRoadEquipment	OperHorsePower	124.00	200.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	4.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	41.00	0.00
tblVehicleTrips	CNW_TTP	41.00	0.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	CW_TTP	33.00	100.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	DV_TP	19.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	77.00	100.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	2.46	2.56
tblVehicleTrips	ST_TR	1.68	2.83

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

tblVehicleTrips	ST_TR	1.68	2.13
tblVehicleTrips	SU_TR	1.05	1.29
tblVehicleTrips	SU_TR	1.68	2.83
tblVehicleTrips	SU_TR	1.68	2.13
tblVehicleTrips	WD_TR	6.97	5.48
tblVehicleTrips	WD_TR	11.03	10.82
tblVehicleTrips	WD_TR	1.68	2.83
tblVehicleTrips	WD_TR	1.68	2.13
tblWater	IndoorWaterUseRate	58,968,750.00	2,669,062.50
tblWater	IndoorWaterUseRate	41,411,963.28	2,440,937.50
tblWater	IndoorWaterUseRate	165,343,750.00	7,487,062.50
tblWater	IndoorWaterUseRate	25,437,500.00	1,155,235.95
tblWater	OutdoorWaterUseRate	25,381,525.88	2,440,937.50

## 2.0 Emissions Summary

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## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

## 2.1 Overall Construction

### Unmitigated Construction

[illegible]

### Mitigated Construction

[illegible][illegible]

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

**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	4.7461	1.6000e-004	0.0169	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0326	0.0326	9.0000e-005	0.0000	0.0348
Energy	0.0523	0.4754	0.3993	2.8500e-003		0.0361	0.0361		0.0361	0.0361	0.0000	2,559.4038	2,559.4038	0.0942	0.0269	2,569.7840
Mobile	1.1981	2.3571	26.1322	0.0966	11.8375	0.0656	11.9031	3.1425	0.0605	3.2030	0.0000	8,740.6683	8,740.6683	0.1778	0.0000	8,745.1142
Offroad	0.0627	0.7295	0.3346	1.3800e-003		0.0244	0.0244		0.0225	0.0225	0.0000	121.0135	121.0135	0.0391	0.0000	121.9920
Waste						0.0000	0.0000		0.0000	0.0000	265.5914	0.0000	265.5914	15.6960	0.0000	657.9913
Water						0.0000	0.0000		0.0000	0.0000	4.3630	65.6958	70.0587	0.4508	0.0111	84.6499
<b>Total</b>	<b>6.0592</b>	<b>3.5621</b>	<b>26.8830</b>	<b>0.1008</b>	<b>11.8375</b>	<b>0.1262</b>	<b>11.9637</b>	<b>3.1425</b>	<b>0.1191</b>	<b>3.2616</b>	<b>269.9543</b>	<b>11,486.8139</b>	<b>11,756.7683</b>	<b>16.4581</b>	<b>0.0381</b>	<b>12,179.5661</b>



## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

**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	4.7461	1.6000e-004	0.0169	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0326	0.0326	9.0000e-005	0.0000	0.0348
Energy	0.0514	0.4676	0.3927	2.8100e-003		0.0355	0.0355		0.0355	0.0355	0.0000	2,539.0902	2,539.0902	0.0936	0.0267	2,549.3776
Mobile	1.1981	2.3571	26.1322	0.0966	11.8375	0.0656	11.9031	3.1425	0.0605	3.2030	0.0000	8,740.6683	8,740.6683	0.1778	0.0000	8,745.1142
Offroad	0.0627	0.7295	0.3346	1.3800e-003		0.0244	0.0244		0.0225	0.0225	0.0000	121.0135	121.0135	0.0391	0.0000	121.9920
Waste						0.0000	0.0000		0.0000	0.0000	265.5914	0.0000	265.5914	15.6960	0.0000	657.9913
Water						0.0000	0.0000		0.0000	0.0000	4.3630	65.6958	70.0587	0.4508	0.0111	84.6499
<b>Total</b>	<b>6.0584</b>	<b>3.5543</b>	<b>26.8764</b>	<b>0.1008</b>	<b>11.8375</b>	<b>0.1256</b>	<b>11.9631</b>	<b>3.1425</b>	<b>0.1185</b>	<b>3.2610</b>	<b>269.9543</b>	<b>11,466.5004</b>	<b>11,736.4547</b>	<b>16.4575</b>	<b>0.0378</b>	<b>12,159.1597</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>0.01</b>	<b>0.22</b>	<b>0.02</b>	<b>0.04</b>	<b>0.00</b>	<b>0.48</b>	<b>0.01</b>	<b>0.00</b>	<b>0.50</b>	<b>0.02</b>	<b>0.00</b>	<b>0.18</b>	<b>0.17</b>	<b>0.00</b>	<b>0.68</b>	<b>0.17</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	Demolition	Demolition	3/1/2018	4/11/2018	5	30	

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

**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; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	0	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40

**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	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

### 3.2 Demolition - 2018

### Unmitigated Construction On-Site

[illegible]

### Unmitigated Construction Off-Site

[illegible]

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

**3.2 Demolition - 2018****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	0.0000	0.0000	0.0000	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>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**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	0.0000	0.0000	0.0000	0.0000	0.0000	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>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**4.0 Operational Detail - Mobile**

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

## 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	1.1981	2.3571	26.1322	0.0966	11.8375	0.0656	11.9031	3.1425	0.0605	3.2030	0.0000	8,740.668 3	8,740.668 3	0.1778	0.0000	8,745.114 2
Unmitigated	1.1981	2.3571	26.1322	0.0966	11.8375	0.0656	11.9031	3.1425	0.0605	3.2030	0.0000	8,740.668 3	8,740.668 3	0.1778	0.0000	8,745.114 2

## 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	1,397.40	336.60	173.40	6,471,410	6,471,410
General Office Building	2,521.06	596.48	300.57	11,655,229	11,655,229
Unrefrigerated Warehouse-No Rail	2,023.45	2,023.45	2023.45	12,226,494	12,226,494
Mini-Storage	234.30	234.30	234.30	1,415,734	1,415,734
Total	6,176.21	3,190.83	2,731.72	31,768,868	31,768,868

## 4.3 Trip Type Information

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

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 Light Industry	16.60	8.40	6.90	100.00	0.00	0.00	100	0	0
General Office Building	16.60	8.40	6.90	100.00	0.00	0.00	100	0	0
Unrefrigerated Warehouse-No Rail	16.60	8.40	6.90	100.00	0.00	0.00	100	0	0
Mini-Storage	16.60	8.40	6.90	100.00	0.00	0.00	100	0	0

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
General Office Building	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Unrefrigerated Warehouse-No Rail	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Mini-Storage	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

Exceed Title 24

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,030.1049	2,030.1049	0.0838	0.0173	2,037.3676
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,041.9268	2,041.9268	0.0843	0.0174	2,049.2319
NaturalGas Mitigated	0.0514	0.4676	0.3927	2.8100e-003		0.0355	0.0355		0.0355	0.0355	0.0000	508.9854	508.9854	9.7600e-003	9.3300e-003	512.0100
NaturalGas Unmitigated	0.0523	0.4754	0.3993	2.8500e-003		0.0361	0.0361		0.0361	0.0361	0.0000	517.4770	517.4770	9.9200e-003	9.4900e-003	520.5521

## 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 Light Industry	7.62692e+006	0.0411	0.3739	0.3141	2.2400e-003		0.0284	0.0284		0.0284	0.0284	0.0000	407.0016	407.0016	7.8000e-003	7.4600e-003	409.4202
General Office Building	672680	3.6300e-003	0.0330	0.0277	2.0000e-004		2.5100e-003	2.5100e-003		2.5100e-003	2.5100e-003	0.0000	35.8968	35.8968	6.9000e-004	6.6000e-004	36.1101
Unrefrigerated Warehouse-No Rail	1.21121e+006	6.5300e-003	0.0594	0.0499	3.6000e-004		4.5100e-003	4.5100e-003		4.5100e-003	4.5100e-003	0.0000	64.6348	64.6348	1.2400e-003	1.1800e-003	65.0189
Mini-Storage	186340	1.0000e-003	9.1300e-003	7.6700e-003	5.0000e-005		6.9000e-004	6.9000e-004		6.9000e-004	6.9000e-004	0.0000	9.9438	9.9438	1.9000e-004	1.8000e-004	10.0029
<b>Total</b>		<b>0.0523</b>	<b>0.4753</b>	<b>0.3993</b>	<b>2.8500e-003</b>		<b>0.0361</b>	<b>0.0361</b>		<b>0.0361</b>	<b>0.0361</b>	<b>0.0000</b>	<b>517.4770</b>	<b>517.4770</b>	<b>9.9200e-003</b>	<b>9.4800e-003</b>	<b>520.5521</b>

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

**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 Light Industry	7.52916e+006	0.0406	0.3691	0.3100	2.2100e-003		0.0281	0.0281		0.0281	0.0281	0.0000	401.7846	401.7846	7.7000e-003	7.3700e-003	404.1722
General Office Building	652500	3.5200e-003	0.0320	0.0269	1.9000e-004		2.4300e-003	2.4300e-003		2.4300e-003	2.4300e-003	0.0000	34.8199	34.8199	6.7000e-004	6.4000e-004	35.0268
Unrefrigerated Warehouse-No Rail	1.17552e+006	6.3400e-003	0.0576	0.0484	3.5000e-004		4.3800e-003	4.3800e-003		4.3800e-003	4.3800e-003	0.0000	62.7301	62.7301	1.2000e-003	1.1500e-003	63.1029
Mini-Storage	180849	9.8000e-004	8.8700e-003	7.4500e-003	5.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004	0.0000	9.6508	9.6508	1.8000e-004	1.8000e-004	9.7081
<b>Total</b>		<b>0.0514</b>	<b>0.4676</b>	<b>0.3927</b>	<b>2.8000e-003</b>		<b>0.0355</b>	<b>0.0355</b>		<b>0.0355</b>	<b>0.0355</b>	<b>0.0000</b>	<b>508.9853</b>	<b>508.9853</b>	<b>9.7500e-003</b>	<b>9.3400e-003</b>	<b>512.0100</b>



## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

**5.3 Energy by Land Use - Electricity****Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	2.46595e+006	785.7051	0.0324	6.7100e-003	788.5160
General Office Building	2.06222e+006	657.0682	0.0271	5.6100e-003	659.4189
Unrefrigerated Warehouse-No Rail	1.62973e+006	519.2663	0.0214	4.4400e-003	521.1240
Mini-Storage	250727	79.8871	3.3000e-003	6.8000e-004	80.1729
<b>Total</b>		<b>2,041.9268</b>	<b>0.0843</b>	<b>0.0174</b>	<b>2,049.2319</b>

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

**5.3 Energy by Land Use - Electricity****Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	2.45279e+006	781.5117	0.0323	6.6800e-003	784.3076
General Office Building	2.04544e+006	651.7214	0.0269	5.5700e-003	654.0530
Unrefrigerated Warehouse-No Rail	1.62352e+006	517.2888	0.0214	4.4200e-003	519.1394
Mini-Storage	249773	79.5829	3.2900e-003	6.8000e-004	79.8676
<b>Total</b>		<b>2,030.1048</b>	<b>0.0838</b>	<b>0.0174</b>	<b>2,037.3676</b>

**6.0 Area Detail****6.1 Mitigation Measures Area**

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.7461	1.6000e-004	0.0169	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0326	0.0326	9.0000e-005	0.0000	0.0348
Unmitigated	4.7461	1.6000e-004	0.0169	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0326	0.0326	9.0000e-005	0.0000	0.0348

## 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	4.7445					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.5900e-003	1.6000e-004	0.0169	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0326	0.0326	9.0000e-005	0.0000	0.0348
<b>Total</b>	<b>4.7461</b>	<b>1.6000e-004</b>	<b>0.0169</b>	<b>0.0000</b>		<b>6.0000e-005</b>	<b>6.0000e-005</b>		<b>6.0000e-005</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>0.0326</b>	<b>0.0326</b>	<b>9.0000e-005</b>	<b>0.0000</b>	<b>0.0348</b>

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

**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	4.7445					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.5900e-003	1.6000e-004	0.0169	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0326	0.0326	9.0000e-005	0.0000	0.0348
<b>Total</b>	<b>4.7461</b>	<b>1.6000e-004</b>	<b>0.0169</b>	<b>0.0000</b>		<b>6.0000e-005</b>	<b>6.0000e-005</b>		<b>6.0000e-005</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>0.0326</b>	<b>0.0326</b>	<b>9.0000e-005</b>	<b>0.0000</b>	<b>0.0348</b>

**7.0 Water Detail****7.1 Mitigation Measures Water**

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	70.0587	0.4508	0.0111	84.6499
Unmitigated	70.0587	0.4508	0.0111	84.6499

## 7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	2.66906 / 0	11.9201	0.0874	2.1500e-003	14.7460
General Office Building	2.44094 / 2.44094	19.5419	0.0803	2.0400e-003	22.1572
Unrefrigerated Warehouse-No Rail	7.48706 / 0	33.4374	0.2453	6.0300e-003	41.3643
Mini-Storage	1.15524 / 0	5.1593	0.0378	9.3000e-004	6.3824
<b>Total</b>		<b>70.0587</b>	<b>0.4508</b>	<b>0.0112</b>	<b>84.6499</b>

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

**7.2 Water by Land Use****Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	2.66906 / 0	11.9201	0.0874	2.1500e-003	14.7460
General Office Building	2.44094 / 2.44094	19.5419	0.0803	2.0400e-003	22.1572
Unrefrigerated Warehouse-No Rail	7.48706 / 0	33.4374	0.2453	6.0300e-003	41.3643
Mini-Storage	1.15524 / 0	5.1593	0.0378	9.3000e-004	6.3824
<b>Total</b>		<b>70.0587</b>	<b>0.4508</b>	<b>0.0112</b>	<b>84.6499</b>

**8.0 Waste Detail****8.1 Mitigation Measures Waste**

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

**Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	265.5914	15.6960	0.0000	657.9913
Unmitigated	265.5914	15.6960	0.0000	657.9913

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

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	316.2	64.1857	3.7933	0.0000	159.0175
General Office Building	216.69	43.9861	2.5995	0.0000	108.9737
Unrefrigerated Warehouse-No Rail	672.1	136.4302	8.0628	0.0000	338.0001
Mini-Storage	103.4	20.9893	1.2404	0.0000	52.0000
<b>Total</b>		<b>265.5914</b>	<b>15.6960</b>	<b>0.0000</b>	<b>657.9913</b>

## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

**8.2 Waste by Land Use****Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	316.2	64.1857	3.7933	0.0000	159.0175
General Office Building	216.69	43.9861	2.5995	0.0000	108.9737
Unrefrigerated Warehouse-No Rail	672.1	136.4302	8.0628	0.0000	338.0001
Mini-Storage	103.4	20.9893	1.2404	0.0000	52.0000
<b>Total</b>		<b>265.5914</b>	<b>15.6960</b>	<b>0.0000</b>	<b>657.9913</b>

**9.0 Operational Offroad**


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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Off-Highway Tractors	2	4.00	365	200	0.44	CNG



## Altitude Business Centre (Passenger Cars - Mitigated) - San Bernardino-South Coast County, Annual

**UnMitigated/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
Equipment Type	tons/yr										MT/yr					
Off-Highway Tractors	0.0627	0.7295	0.3346	1.3800e-003		0.0244	0.0244		0.0225	0.0225	0.0000	121.0135	121.0135	0.0391	0.0000	121.9920
<b>Total</b>	<b>0.0627</b>	<b>0.7295</b>	<b>0.3346</b>	<b>1.3800e-003</b>		<b>0.0244</b>	<b>0.0244</b>		<b>0.0225</b>	<b>0.0225</b>	<b>0.0000</b>	<b>121.0135</b>	<b>121.0135</b>	<b>0.0391</b>	<b>0.0000</b>	<b>121.9920</b>

**10.0 Stationary Equipment****Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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**Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**