# AIR QUALITY AND GREENHOUSE GAS ANALYSIS

**ROUTE 66 MARKET & GAS STATION PROJECT**

**UNINCORPORATED COMMUNITY OF HELENDALE**

**SAN BERNARDINO COUNTY, CALIFORNIA**

LSA

May 2017

This Page Intentionally Left Blank

# AIR QUALITY AND GREENHOUSE GAS ANALYSIS

## ROUTE 66 MARKET & GAS STATION PROJECT

## UNINCORPORATED COMMUNITY OF HELENDALE

## SAN BERNARDINO COUNTY, CALIFORNIA

Submitted to:

PA Design Associates
12371 Antelope Drive
Victorville, California 92392

Prepared by:

LSA Associates, Inc.
20 Executive Park, Suite 200
Irvine, California 92614
(949) 553-0666

Project No. HMD1701

LSA

May 2017

This Page Intentionally Left Blank

# EXECUTIVE SUMMARY

LSA was retained by PA Design Associates to prepare an air quality and greenhouse gas (GHG) impact study for the proposed Route 66 Market & Gas Station Project (proposed project) to be located in the unincorporated community of Helendale (Community) in the County of San Bernardino (County), California.

The air quality study provides a discussion of the proposed project, the physical setting of the project area, and the regulatory framework for air quality. The report provides data on existing air quality and evaluates potential air quality impacts associated with the proposed project.

Emissions with regional effects during project construction, calculated with the California Emissions Estimator Model (CalEEMod) Version 2016.3.1 model, would not exceed criteria pollutant thresholds established by the Mojave Desert Air Quality Management District (MDAQMD). Compliance with MDAQMD rules and regulations during construction will reduce construction-related air quality impacts from fugitive dust emissions and construction equipment emissions. Standard dust suppression measures recommended by the MDAQMD have been identified.

The proposed project is located in San Bernardino County, which does not have serpentine and ultramafic rock in its soil. Therefore, the potential risk for naturally occurring asbestos (NOA) during project construction is less than significant.

Operational emissions for the entire project would not exceed the daily screening level thresholds for any of the criteria pollutants. An evaluation of potential odors from construction activities and project operation indicated that the project would not expose substantial numbers of people to objectionable odors.

The proposed project would not expose sensitive receptors to substantial pollutant concentrations after application of mitigation measures.

The proposed project would not create objectionable odors that affect sensitive receptors near the project area after application of mitigation measures.

Quantitative screening-level health risk assessments were conducted to assess impacts to sensitive receptors (i.e., residences) from toxic air contaminants (TACs) during construction activities as well as operation of the market and gas station facility. Construction and operational TAC impacts were both found to be less than significant.

The potential of the project to affect global climate change (GCC) is also addressed. Short-term construction and long-term operational emissions of the principal GHGs, including carbon dioxide ($CO_2$) and methane ($CH_4$), are quantified, and their significance relative to the California Air Resources Board (ARB) Scoping Plan is discussed.

The project-related construction activities are estimated to generate approximately 63.75 metric tons (MT) of carbon dioxide equivalent ($CO_2e$) emissions. The project-related operational GHG

emissions are estimated to generate approximately 2,055 $MTCO_2e$ emissions per year, which is less than the County's GHG threshold of 3,000 $MTCO_2e$ emissions per year for discretionary development projects. As no project-level or cumulative significant GHG impacts are anticipated for the project, no mitigation measures are required.

The proposed project will require a conditional use permit (CUP) and an amendment to the County's General Plan. The analysis concludes that the proposed project would not conflict with the growth projections in the County's General Plan. The current County's General Plan is consistent with the 2016 Southern California Association of Governments (SCAG) Regional Transportation Plan/ Sustainable Communities Strategies (RTP/SCS) and the adopted MDAQMD 2017 Ozone Attainment Plan (OAP) and the 1995 Particulate Matter ($PM_{10}$) Attainment Plan. Therefore, the proposed project is consistent with the RTP/SCS and OAP and $PM_{10}$ Attainment Plan.

The evaluation was prepared in conformance with appropriate standards, utilizing procedures and methodologies in the MDAQMD *CEQA and Federal Conformity Guidance* (MDAQMD 2016) and the San Bernardino County's *Greenhouse Gas Emission Reduction Plan* (County 2011).

# TABLE OF CONTENTS

## FIGURES



## TABLES

# APPENDICES

A: CALEEMOD PRINTOUTS
B: TAC EMISSIONS AND SCREENING HRA ANALYSIS

**This Page Intentionally Left Blank**

# LIST OF ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| °C | degrees Celsius |
| °F | degrees Fahrenheit |
| µg/m$^3$ | micrograms per cubic meter |
| AAQS | ambient air quality standards |
| AB | Assembly Bill |
| AER | Annual Emission Reporting |
| AQAP | Air Quality Attainment Plan |
| ARB | California Air Resources Board |
| CAA | Clean Air Act |
| CAAQS | California Ambient Air Quality Standards |
| CalEEMod | California Emissions Estimator Model |
| CalEPA | California Environmental Protection Agency |
| CAPCOA | California Air Pollution Control Officers Association |
| CCAA | California Clean Air Act |
| CEQA | California Environmental Quality Act |
| $CH_4$ | methane |
| CO | carbon monoxide |
| $CO_2$ | carbon dioxide |
| $CO_2e$ | carbon dioxide equivalent |
| $CO_2e$/yr | carbon dioxide equivalent per year |
| Community | Helendale |
| County | County of San Bernardino |
| DPM | diesel particulate matter |
| EPA | United States Environmental Protection Agency |
| GCC | global climate change |
| GHG | greenhouse gas |
| GWP | global warming potential |
| $H_2S$ | hydrogen sulfide |
| HFCs | hydrofluorocarbons |
| HI | hazard index |
| I-15 | Interstate 15 |

| | |
|---|---|
| IGR | Intergovernmental Review |
| lbs/day | pounds per day |
| MDAB | Mojave Desert Air Basin |
| MDAQMD | Mojave Desert Air Quality Management District |
| $mg/m^3$ | milligrams per cubic meter |
| MMT | million metric tons |
| $MMTCO_2e$ | million metric tons of carbon dioxide equivalent |
| mph | miles per hour |
| MPO | Metropolitan Planning Organization |
| MT | metric tons |
| MT/yr $CO_2e$ | metric tons per year of carbon dioxide equivalent |
| $N_2O$ | nitrous oxide |
| NAAQS | National Ambient Air Quality Standards |
| NO | nitric oxide |
| $NO_2$ | nitrogen dioxide |
| NOA | naturally occurring asbestos |
| NOx | nitrogen oxides |
| $O_3$ | ozone (or smog) |
| OAP | Ozone Attainment Plan |
| OEHHA | Office of Environmental Health Hazard Assessment |
| OPR | Governor's Office of Planning and Research |
| PFCs | perfluorocarbons |
| PM | particulate matter |
| $PM_{10}$ | particulate matter less than 10 microns in size |
| $PM_{2.5}$ | particulate matter less than 2.5 microns in size |
| ppb | parts per billion |
| ppm | parts per million |
| PRC | Public Resources Code |
| REL | Reference Exposure Level |
| ROCs | Reactive Organic Compounds |
| ROGs | Reactive Organic Gases |
| RTP/SCS | Regional Transportation Plan/Sustainable Communities Strategy |
| SANBAG | San Bernardino County Associated Governments |

| | |
|---|---|
| SB | Senate Bill |
| SCAG | Southern California Association of Governments |
| SCAQMD | South Coast Air Quality Management District |
| $SF_6$ | sulfur hexafluoride |
| SIP | State Implementation Plan |
| $SO_2$ | sulfur dioxide |
| SOx | sulfur oxides |
| SR-66 | State Route 66 |
| SR-395 | State Route 395 |
| State | State of California |
| TACs | toxic air contaminants |
| T-BACT | toxics best available control technology |
| UNFCCC | United Nations Framework Convention on Climate Change |
| USC | United States Code |
| VOCs | volatile organic compounds |

**This Page Intentionally Left Blank**

# INTRODUCTION

This air quality and climate change impact analysis has been prepared to evaluate the potential air quality impacts and mitigation measures associated with the proposed Route 66 Market & Gas Station Project (proposed project) to be located in the unincorporated community of Helendale (Community) in the County of San Bernardino (County), California. This report provides a project-specific air quality and climate change impact analysis by examining the impacts of the proposed uses on adjacent sensitive land uses as well as the impacts on the proposed uses on the project site, and evaluating the mitigation measures required as part of the project design. The air quality analysis in this report is consistent with guidance provided by the Mojave Desert Air Quality Management District's (MDAQMD) *California Environmental Quality Act (CEQA) and Federal Conformity Guidelines*. In addition, the greenhouse gas emission analysis in this report is consistent with the guidance provided by the County's *Greenhouse Gas Emission Reduction Plan*.

## PROJECT LOCATION AND DESCRIPTION

The 1.74-acre project site is located at the corner of National Trail Highway and Vista Road in Helendale, San Bernardino County, California. As shown in Figure 1, regional access to the project site is provided by State Route 66 (SR-66) to the east of the project site, between State Route 395 (SR-395) to the west and Interstate 15 (I-15) to the southeast.

### Existing Land Uses on the Project Site and in the Project Vicinity

According to the San Bernardino County zoning and General Plan land use maps, the project site is currently zoned as rural living (RL). The project applicant is requesting for a zoning change to General Commercial (GC). The Assessor's Parcel Number is 467-101-12.

The project site is currently vacant. The proposed project consists of a gas station with a convenience store comprising 12 fuel stations (6 pumps), two 499-gallon propane tanks, a 4,998-square foot building that will contain convenience store and fast food with off-sales type 21 liquor license, tobacco, and propane sales, and 28 parking spaces. A proposed site plan is presented in Figure 2.

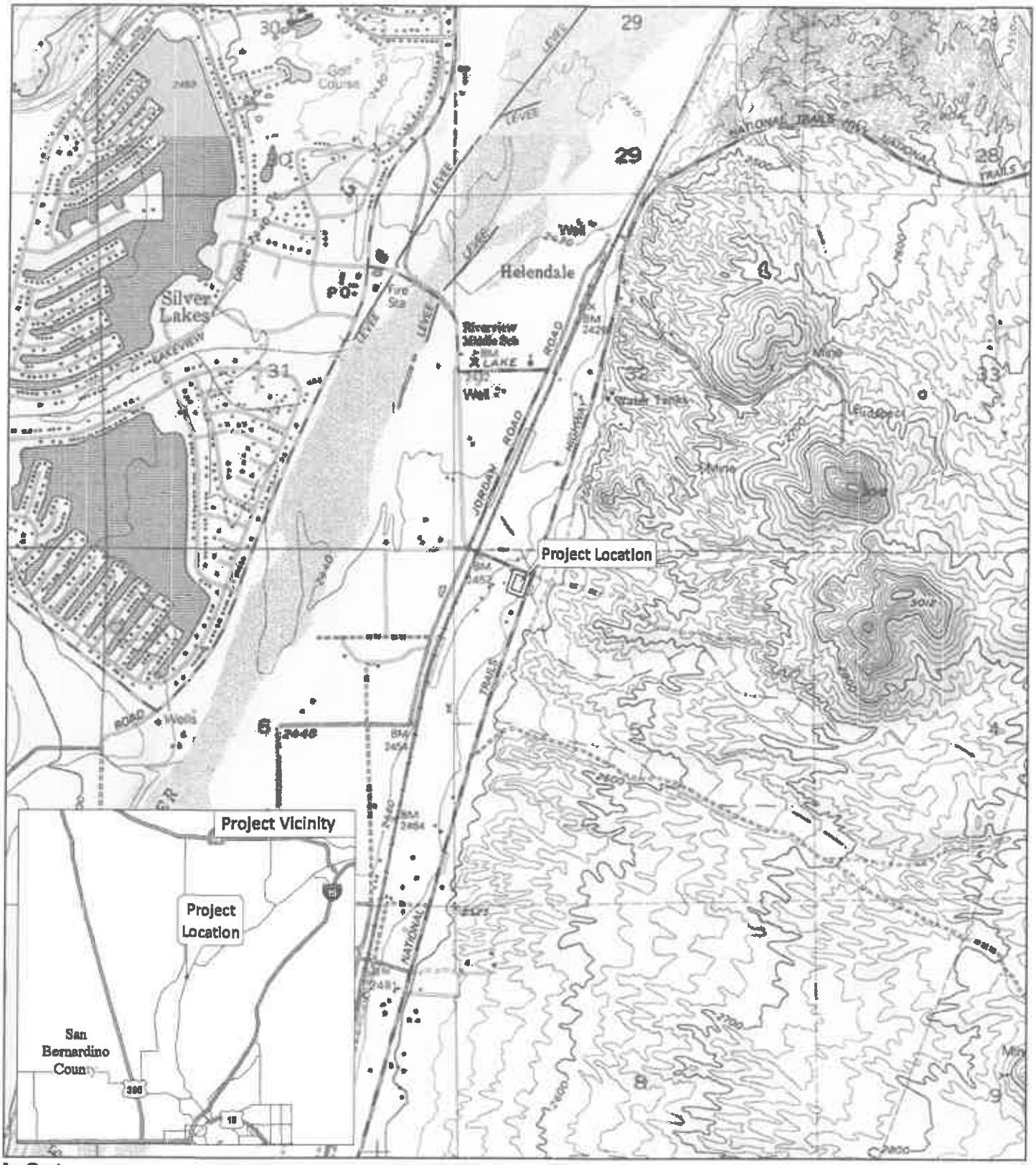
### Project Schedule

Project construction is anticipated to occur over a six-month period. The expected date of completion is July 2018. All construction equipment, including construction worker vehicles, would be staged on the project site for the duration of the construction period.

### Sensitive Land Uses in the Project Vicinity

The project site is bounded by National Trail Highway to the east, Vista Road to the north, and a single-family home located adjacent to the west. The next nearest single-family home is located approximately 1,200 feet to the northwest.

**This Page Intentionally Left Blank**




LSA

FIGURE 1

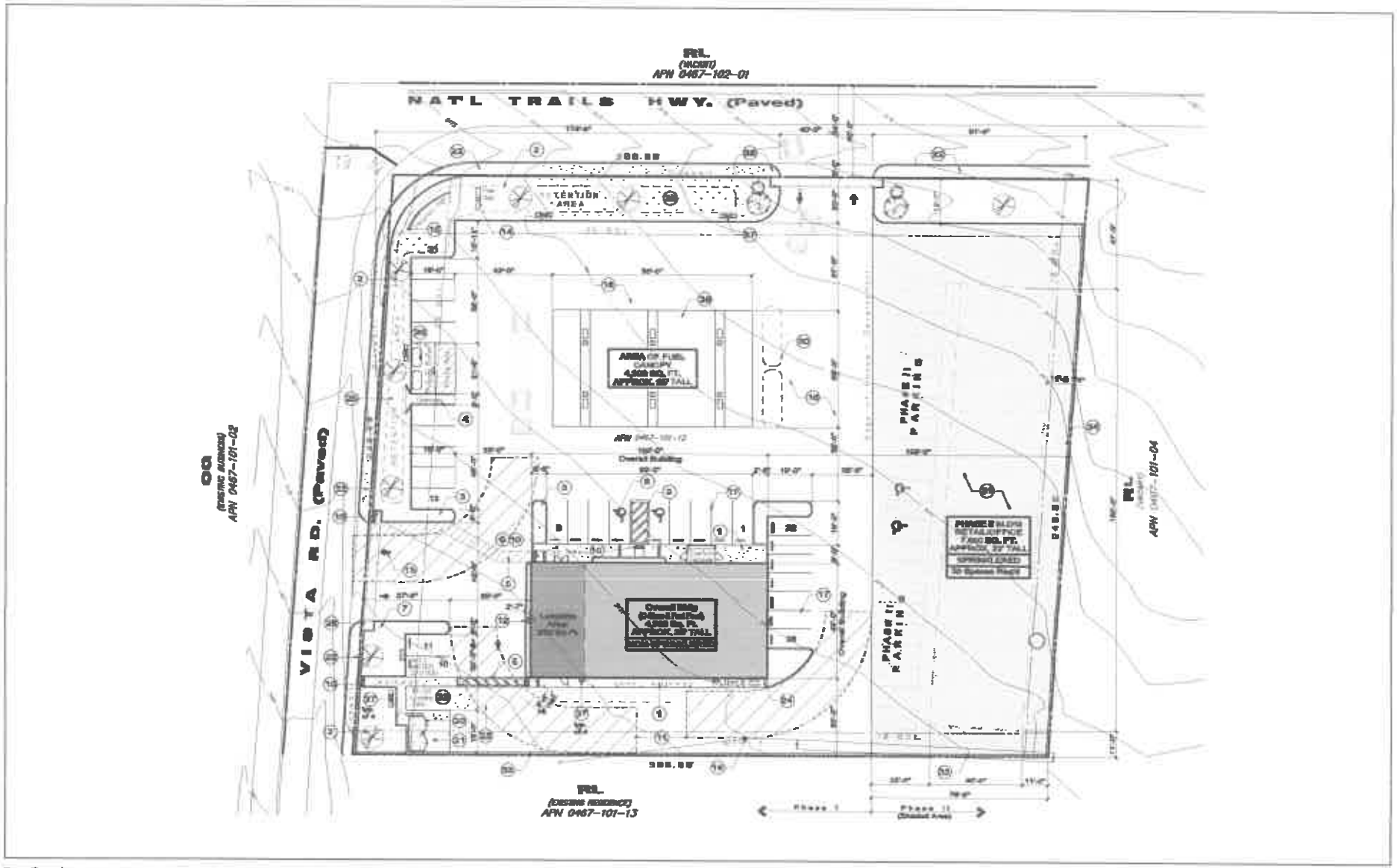
SOURCE: USGS 7.5' Quad - Helendale (1993)

I:\HMD1701\GIS\ProjectLocation_USGS.mxd (5/24/2017)

*Helendale Route 66 Market & Gas*

Project Location Map

**This Page Intentionally Left Blank**




LSA

FIGURE 2

0 30 60
FEET

SOURCE: PA Design Associates

I:\HMD1701\G\Site Plan.cdr (5/24/2017)

*Helendale Route 66 Market & Gas*

**Proposed Site Plan**

**This Page Intentionally Left Blank**

# PROJECT SETTING

## REGIONAL AIR QUALITY

The project site is located in County of San Bernardino, California, which is part of the Mojave Desert Air Basin (MDAB) and is under the jurisdiction of the MDAQMD. The air quality assessment for the proposed project includes estimating emissions associated with short-term construction and long-term operation of the proposed project.

A number of air quality modeling tools are available to assess the air quality impacts of projects. In addition, certain air districts, such as the MDAQMD, have created guidelines and requirements to conduct air quality analyses. The MDAQMD's current guidelines, included in its *CEQA and Federal Conformity Guidelines* (2011) and associated updates, were followed in the assessment of air quality impacts for the proposed project.

Both the State of California (State) and the federal government have established health-based ambient air quality standards (AAQS) for seven air pollutants. As detailed in Table A, these pollutants include ozone ($O_3$), carbon monoxide (CO), nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), particulate matter less than 10 microns in size ($PM_{10}$), particulate matter less than 2.5 microns in size ($PM_{2.5}$), and lead. In addition, the State has set standards for sulfates, hydrogen sulfide ($H_2S$), vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. Table A presents the national and state ambient air quality standards.

### Mojave Desert Air Basin

The project area is located within the MDAB. The land within the MDAB includes mountain ranges interspersed with long, broad valleys that often contain dry lakes. Many of the lower mountains rise from 1,000 to 4,000 feet above the valley floor. The MDAB covers more than 20,000 square miles and includes most of California's high desert, along with portions of Eastern Kern, Northern Los Angeles, and Eastern Riverside Counties (MDAQMD 2011). The MDAQMD has jurisdiction over the desert portion of San Bernardino County and the far eastern end of Riverside County. This region includes the incorporated communities of Adelanto, Apple Valley, Barstow, Blythe, Hesperia, Needles, Twentynine Palms, Victorville, and Yucca Valley, along with several unincorporated communities including Helendale.

Under CEQA, the MDAQMD is an expert commenting agency on air quality and related matters within its jurisdiction or affecting its jurisdiction. The MDAQMD reviews projects to ensure that they will not: (1) cause or contribute to any new violation of any air quality standard; (2) increase the frequency or severity of any existing violation of any air quality standard; or (3) delay timely attainment of any air quality standard or any required interim emission reductions or other milestones of any federal attainment plan.

## Table A: Ambient Air Quality Standards

| Pollutant | Averaging Time | California Standards | | National Standards | | |
|---|---|---|---|---|---|---|
| | | Concentration[3] | Method[4] | Primary[5,7] | Secondary[6,7] | Method[7] |
| Ozone[8] ($O_3$) | 1-Hour | 0.09 ppm (180 µg/m³) | Ultraviolet Photometry | – | Same as Primary Standard | Ultraviolet Photometry |
| | 8-Hour | 0.07 ppm (137 µg/m³) | | 0.070 ppm (137 µg/m³) | | |
| Respirable Particulate Matter ($PM_{10}$)[9] | 24-Hour | 50 µg/m³ | Gravimetric or Beta Attenuation | 150 µg/m³ | Same as Primary Standard | Inertial Separation and Gravimetric Analysis |
| | Annual Arithmetic Mean | 20 µg/m³ | | – | | |
| Fine Particulate Matter ($PM_{2.5}$)[9] | 24-Hour | – | – | 35 µg/m³ | Same as Primary Standard | Inertial Separation and Gravimetric Analysis |
| | Annual Arithmetic Mean | 12 µg/m³ | Gravimetric or Beta Attenuation | 12 µg/m³ | 15 µg/m³ | |
| Carbon Monoxide (CO) | 1-Hour | 20 ppm (23 mg/m³) | Non-Dispersive Infrared Photometry (NDIR) | 35 ppm (40 mg/m³) | – | Non-Dispersive Infrared Photometry (NDIR) |
| | 8-Hour | 9.0 ppm (10 mg/m³) | | 9 ppm (10 mg/m³) | – | |
| | 8-Hour (Lake Tahoe) | 6 ppm (7 mg/m³) | | – | – | |
| Nitrogen Dioxide ($NO_2$)[10] | 1-Hour | 0.18 ppm (339 µg/m³) | Gas Phase Chemiluminescence | 100 ppb (188 µg/m³) | – | Gas Phase Chemi-luminescence |
| | Annual Arithmetic Mean | 0.03 ppm (57 µg/m³) | | 0.053 ppm (100 µg/m³) | Same as Primary Standard | |
| Sulfur Dioxide ($SO_2$)[11] | 1-Hour | 0.25 ppm (655 µg/m³) | Ultraviolet Fluorescence | 75 ppb (196 µg/m³) | – | Ultraviolet Fluorescence; Spectro-photometry (Pararosaniline Method) |
| | 3-Hour | – | | – | 0.5 ppm (1300 µg/m³) | |
| | 24-Hour | 0.04 ppm (105 µg/m³) | | 0.14 ppm (for certain areas)[10] | – | |
| | Annual Arithmetic Mean | – | | 0.030 ppm (for certain areas)[10] | – | |
| Lead (Pb)[12,13] | 30-Day Average | 1.5 µg/m³ | Atomic Absorption | – | – | High Volume Sampler and Atomic Absorption |
| | Calendar Quarter | – | | 1.5 µg/m³ (for certain areas)[13] | Same as Primary Standard | |
| | Rolling 3-Month Average | – | | 0.15 µg/m³ | | |
| Visibility-Reducing Particles[14] | 8-Hour | See footnote 13. | Beta Attenuation and Transmittance through Filter Tape | No National Standards | | |
| Sulfates | 24-Hour | 25 µg/m³ | Ion Chromatography | | | |
| Hydrogen Sulfide | 1-Hour | 0.03 ppm (42 µg/m³) | Ultraviolet Fluorescence | | | |
| Vinyl Chloride[12] | 24-Hour | 0.01 ppm (26 µg/m³) | Gas Chromatography | | | |

Source: Ambient Air Quality Standards (ARB 2015). Website: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, accessed March 2016.

Footnotes are provided on the following page.

1 California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, suspended particulate matter ($PM_{10}$, $PM_{2.5}$, and visibility-reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For $PM_{10}$, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact EPA for further clarification and current national policies.

3 Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7 Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

8 On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 ppm to 0.070 ppm.

9 On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour $PM_{10}$ standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10 To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national standards are in units of ppb. California standards are in units of ppm. To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb are identical to 0.100 ppm.

11 On June 2, 2010, a new 1-hour $SO_2$ standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 $SO_2$ national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12 The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13 The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14 In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

°C = degrees Celsius
ARB = California Air Resources Board
EPA = United States Environmental Protection Agency
ppb = parts per billion
ppm = parts per million
$mg/m^3$ = milligrams per cubic meter
$\mu g/m^3$ = micrograms per cubic meter

Table B summarizes the primary health effects and sources of common air pollutants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety, these health effects will not occur unless the standards are exceeded by a large margin or for a prolonged period of time. California AAQS (CAAQS) are more stringent than national AAQS (NAAQS). Among the pollutants, $O_3$ and particulate matter ($PM_{2.5}$ and $PM_{10}$) are considered pollutants with regional effects, while the others have more localized effects.

**Table B: Summary of Health Effects of the Major Criteria Air Pollutants**

| Pollutant | Health Effects | Examples of Sources |
|---|---|---|
| Particulate matter ($PM_{10}$: less than or equal to 10 microns in diameter, and $PM_{2.5}$, less than or equal to 2.5 microns in diameter) | • Hospitalizations for worsened heart diseases<br>• Emergency room visits for asthma<br>• Premature death | • Cars and trucks (especially diesels)<br>• Fireplaces, woodstoves<br>• Windblown dust from roadways, agriculture, and construction |
| Ozone ($O_3$) | • Cough, chest tightness<br>• Difficulty taking a deep breath<br>• Worsened asthma symptoms<br>• Lung inflammation | • Precursor sources[1]: motor vehicles, industrial emissions, and consumer products |
| Carbon monoxide (CO) | • Chest pain in heart patients[2]<br>• Headaches, nausea[2]<br>• Reduced mental alertness[2]<br>• Death at very high levels[2] | • Any source that burns fuel, such as cars, trucks, construction and farming equipment, and residential heaters and stoves |
| Nitrogen dioxide ($NO_2$) | • Increased response to allergens | • See carbon monoxide sources |
| Toxic air contaminants | • Cancer<br>• Chronic eye, lung, or skin irritation<br>• Neurological and reproductive disorders | • Cars and trucks, especially diesels<br>• Industrial sources such as chrome platers<br>• Neighborhood businesses such as dry cleaners and service stations<br>• Building materials and products |

Source: California Air Resources Board. ARB Fact Sheet: Air Pollution and Health. Website: http://www.arb.ca.gov/research/health/fs/fs1/fs1.htm, accessed March 2016.

[1] $O_3$ is not generated directly by these sources. Rather, chemicals emitted by these precursor sources react with sunlight to form $O_3$ in the atmosphere.

[2] Health effects from CO exposures occur at levels considerably higher than ambient.

The California Clean Air Act (CCAA) provides the MDAQMD and other air districts with the authority to manage transportation activities at indirect sources. Indirect sources of pollution include any facility, building, structure, or installation, or combination thereof, which attracts or generates mobile source activity that results in emissions of any pollutant. In addition, area sources that are generated when minor sources collectively emit a substantial amount of pollution are also managed by the local air districts. Examples of this would be the motor vehicles at an intersection, a mall, and on highways. The MDAQMD also regulates stationary sources of pollution throughout its jurisdictional area. Direct emissions from motor vehicles are regulated by the California Air Resources Board (ARB).

## Climate/Meteorology

Air quality in the MDAB is affected by various emission sources (mobile, industry, etc.) as well as by atmospheric conditions such as wind speed, wind direction, temperature, and rainfall. The combination of topography, low mixing height, abundant sunshine, and emissions form the second largest urban area in the United States gives the MDAB some of the highest pollutant concentrations in the country.

During the summer, a Pacific Subtropical High cell that sits off the coast generally influences the MDAB, inhibiting cloud formation and encouraging daytime solar heating. Most desert moisture

arrives from infrequent warm, moist and unstable air masses from the south. The MDAB averages 3 to 7 inches of precipitation per year (from 16 to 30 days of rain with at least 0.01 inch of precipitation). Victorville (the closest meteorological monitoring station to the site) averages 7.5 inches of precipitation and 27 precipitation days per year. The MDAB is classified as a dry-hot desert climate with portions classified as dry-very hot desert, which indicates that average maximum temperatures are over 100.4 degrees Fahrenheit (°F) for at least three months (MDAQMD 2011).

Prevailing winds in the MDAB are from the south, west, and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions, and are blocked by the Sierra Nevada Mountains to the north. Air masses pushed onshore in southern California by differential heating are channeled through the MDAB.

Strong winds are a common occurrence in the High Desert and Helendale. These winds are generated by the climatic differences between the desert and mountains, and also through the tunneling effect of air in the Cajon Pass. The dry surface sediments and soils are easily displaced by these winds often causing soil erosion and affecting air quality and visibility (MDAQMD 2011).

Figure 3 shows a graphic representation of the relative annual frequency of wind speeds and directions at the Victorville Meteorological Station, which is approximately 13 miles northeast of the project area. At this location, winds from the south and west (from the lower left, as shown in Figure 3) tend to predominate on an annual average basis. Winds exceeding 7.5 miles per hour (mph) are common in Victorville (shown in red and blue in Figure 3). The MDAB is separated from the southern California coastal and central California Valley regions by mountains (highest elevation approximately 10,000 feet); it is bordered on the southwest by the San Bernardino Mountains, and is separated from the San Gabriel Mountains by the Cajon Pass (4,200 feet). Passes within these mountains (such as the Cajon Pass) are the main channels for movement of air masses. The project area is just north of Cajon Summit.

The fact that MDAB experiences high prevailing winds (primarily from the south and west) results in smog being transported from the South Coast Air Basin through mountain passes to the MDAB. The exchange of lower and upper air tends to accelerate surface winds during the warm part of the day when convection is at a minimum. During the winter, the rapid cooling of the surface layers at night retards this exchange of momentum, which often results in calm conditions and increased pollutant concentrations.

Airborne pollutants transported into the region from the South Coast Air Basin influence the air quality in the MDAB. Relative to the CAAQS, the MDAB is designated as a non-attainment area for ozone (with oxides of nitrogen [NOx] and volatile organic compounds [VOCs] identified as precursors), $PM_{10}$ and $PM_{2.5}$. Relative to the NAAQS, the MDAB is designated as a moderate non-attainment area for ozone and $PM_{10}$. The MDAB is in a state of attainment for CO, $NO_2$, $SO_2$, lead (Pb), and sulfate and is unclassified for $H_2S$ and visibility reducing particles.

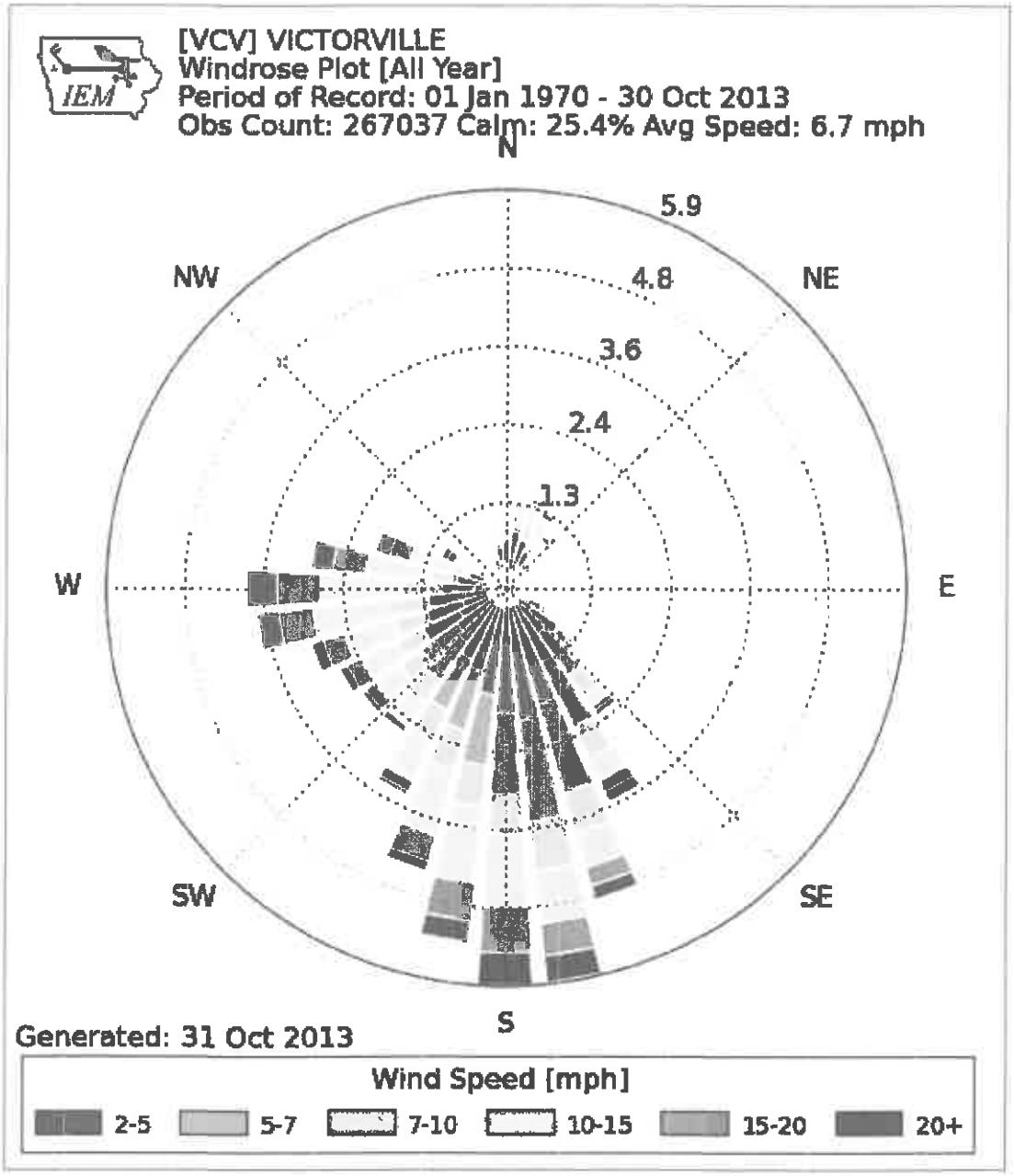



Figure 3: Windrose – Victorville Meteorological Station

Although the MDAB currently exceeds federal and California ozone standards, photochemical ozone modeling conducted by the South Coast Air Quality Management District (SCAQMD) and ARB indicates that the MDAB would be in compliance with both standards without the influence of the transported air pollution from other upwind regions (MDAQMD 2011).

Particulate matter concentrations have fluctuated historically, but the annual average concentrations are generally over the State standards. The Community is affected significantly by

fugitive dust primarily from unpaved roads, construction activities, and local disturbed areas. These particulates can have an adverse impact on sensitive receptors in the population including children, the elderly, persons with respiratory or cardiovascular illness, and people exercising outdoors (MDAQMD 2011).

### Description of Global Climate Change and Its Sources

Global climate change (GCC) is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other significant changes in climate (such as precipitation or wind) that last for an extended period of time. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures.

Climate change refers to any change in measures of weather (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from natural factors, such as changes in the sun's intensity; natural processes within the climate system (e.g., changes in ocean circulation) or human activities, such as the burning of fossil fuels, land clearing, or agriculture. The primary observed effect of GCC has been a rise in the average global tropospheric[1] temperature of 0.36°F per decade, determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling shows that further warming may occur, which may induce additional changes in the global climate system during the current century. Changes to the global climate system, ecosystems, and the environment of the State could include higher sea levels, drier or wetter weather, changes in ocean salinity, changes in wind patterns, or more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold, and increased intensity of tropical cyclones. Specific effects in the State might include a decline in the Sierra Nevada snowpack, erosion of the State's coastline, and seawater intrusion in the San Joaquin Delta.

Global surface temperatures have risen by 1.33°F ± 0.32°F over the last 100 years (1906 to 2005). The rate of warming over the last 50 years is almost double that over the last 100 years (IPCC 2013). The latest projections, based on state-of-the art climate models, indicate that temperatures in the State are expected to rise 3–10.5°F by the end of the century (State of California 2013). The prevailing scientific opinion on climate change is that "most of the warming observed over the last 60 years is attributable to human activities" (IPCC 2013). Increased amounts of carbon dioxide ($CO_2$) and other greenhouse gases (GHGs) are the primary causes of the human-induced component of warming. The observed warming effect associated with the presence of GHGs in the atmosphere (from either natural or human sources) is often referred to as the greenhouse effect.[2]

1 The troposphere is the zone of the atmosphere characterized by water vapor, weather, winds, and decreasing temperature with increasing altitude.

2 The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse lets heat from sunlight in and reduces the amount of heat that escapes, GHGs like $CO_2$, $CH_4$, and $N_2O$ in the atmosphere keep the Earth at a relatively even temperature. Without the greenhouse effect, the Earth would be a frozen globe; thus, the *naturally occurring* greenhouse effect is necessary to keep our planet at a comfortable temperature.

GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced GCC are:[1]

- Carbon Dioxide ($CO_2$);
- Methane ($CH_4$);
- Nitrous Oxide ($N_2O$);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Sulfur hexafluoride ($SF_6$)

Over the last 200 years, human activities have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere and enhancing the natural greenhouse effect, which some scientist believe can cause causing global warming. While GHGs produced by human activities include naturally occurring GHGs such as $CO_2$, $CH_4$, and $N_2O$, some gases, like HFCs, PFCs, and $SF_6$, are completely new to the atmosphere. Certain other gases, such as water vapor, are short-lived in the atmosphere as compared to these GHGs that remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is generally excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation. For the purposes of this air quality study, the term "GHGs" will refer collectively to the six gases identified in the bulleted list provided above.

These gases vary considerably in terms of global warming potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. GWP is based on several factors, including the relative effectiveness of a gas in absorbing infrared radiation and the length of time that the gas remains in the atmosphere ("atmospheric lifetime"). GWP of each gas is measured relative to $CO_2$, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of $CO_2$ over a specified time period. GHG emissions are typically measured in terms of metric tons (MT)[2] of "$CO_2$ equivalents" (MT $CO_2e$). For example, $N_2O$ is 265 times more potent at contributing to global warming than $CO_2$. Table C identifies the GWP for each type of GHG analyzed in this report.

**Table C: Global Warming Potential for Selected Greenhouse Gases**

| Gas | Atmospheric Lifetime (Years) | Global Warming Potential (100-year Time Horizon) |
|---|---|---|
| Carbon Dioxide ($CO_2$) | ~100 | 1 |

[1] The GHGs listed are consistent with the definition in Assembly Bill 32 (Government Code 38505), as discussed later in this section.

[2] A metric ton is equivalent to approximately 1.1 tons.

**Table C: Global Warming Potential for Selected Greenhouse Gases**

| Gas | Atmospheric Lifetime (Years) | Global Warming Potential (100-year Time Horizon) |
|---|---|---|
| Methane ($CH_4$) | 12 | 28 |
| Nitrous Oxide ($N_2O$) | 121 | 265 |

Source: Table 1, First Update to the Climate Change Scoping Plan: Building on the Framework (ARB 2014). Website: http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf, accessed March 2016.

The following discussion summarizes the characteristics of the six primary GHGs.

*Carbon Dioxide*

In the atmosphere, carbon generally exists in its oxidized form, as $CO_2$. Natural sources of $CO_2$ include the respiration (breathing) of humans, animals, and plants; volcanic outgassing; decomposition of organic matter; and evaporation from the oceans. Human-caused sources of $CO_2$ include the combustion of fossil fuels and wood, waste incineration, mineral production, and deforestation. The Earth maintains a natural carbon balance, and when concentrations of $CO_2$ are upset, the system gradually returns to its natural state through natural processes. Natural changes to the carbon cycle work slowly, especially compared to the rapid rate at which humans are adding $CO_2$ to the atmosphere. Natural removal processes, such as photosynthesis by land- and ocean-dwelling plant species, cannot keep pace with this extra input of human-made $CO_2$, and consequently the gas is building up in the atmosphere. The concentration of $CO_2$ in the atmosphere has risen approximately 30 percent since the late 1800s (NAST 2001).

The transportation sector remains the largest source of GHG emissions in 2012 with 36 percent of the State's GHG emission inventory. The largest emissions category within the transportation sector is on-road, which consists of passenger vehicles (cars, motorcycles, and light-duty trucks) and heavy-duty trucks and buses. Emissions from on-road constitute over 92 percent of the transportation sector total. Industry and electricity generation were the State's second- and third-largest categories of GHG emissions, respectively.

*Methane*

$CH_4$ is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources of $CH_4$ include fires, geologic processes, and bacteria that produce $CH_4$ in a variety of settings (most notably, wetlands) (Environmental Protection Agency [EPA] 2010). Anthropogenic sources include rice cultivation, livestock, landfills and waste treatment, biomass burning, and fossil fuel combustion (burning of coal, oil, and natural gas, etc.). As with $CO_2$, the major removal process of atmospheric $CH_4$—a chemical breakdown in the atmosphere—cannot keep pace with source emissions, and $CH_4$ concentrations in the atmosphere are increasing.

*Nitrous Oxide*

$N_2O$ is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for the majority of natural source emissions. $N_2O$ is also a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion sources emit $N_2O$. The quantity of $N_2O$ emitted varies

according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of human-generated $N_2O$ emissions in the State.

*Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride*

HFCs are primarily used as substitutes for $O_3$-depleting substances regulated under the Montreal Protocol.[1] PFCs and $SF_6$ are emitted from various industrial processes, including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. There is no aluminum or magnesium production in the State; however, the rapid growth in the semiconductor industry, which is active in the State, has led to greater use of PFCs. Activities associated with the project are not expected to result in the emissions of these three GHGs; therefore, these substances are not discussed further in this analysis.

## Emissions Sources and Inventories

An emissions inventory that identifies and quantifies the primary human-generated sources and sinks of GHGs is a well-recognized and useful tool for addressing climate change. This section summarizes the latest information on global, national, State, and local GHG emission inventories. However, because GHGs persist for a long time in the atmosphere, accumulate over time, and are generally well mixed, their impact on the atmosphere and climate cannot be tied to a specific point of emission.

*Global Emissions*

Worldwide emissions of GHGs in 2013 totaled 29 billion MT of $CO_2e$ per year ($CO_2e$/yr) (UNFCCC 2015). Global estimates are based on country inventories developed as part of the programs of the United Nations Framework Convention on Climate Change (UNFCCC).

*United States Emissions*

In 2015, the United States emitted approximately 6.6 billion MT of $CO_2e$, down from 7.3 billion MT in 2007. Of the six major sectors nationwide—electric power industry, transportation, industry, agriculture, commercial, and residential—the electric power industry and transportation sectors combined account for approximately 70 percent of the GHG emissions; the majority of the electric power industry and all of the transportation emissions are generated from direct fossil fuel combustion. In 2015, the total United States GHG emissions were approximately 9.0 percent less than 2005 levels (EPA 2015).

*State of California Emissions*

According to ARB emission inventory estimates, the State emitted approximately 442 million metric tons (MMT) of $CO_2e$ ($MMTCO_2e$) emissions in 2014. This is a decrease of 2.8 MMT $CO_2e$ from 2012 and a 9.4 percent decrease since 2004 (ARB 2016).

[1] The Montreal Protocol is an international treaty that was approved on January 1, 1989, and was designated to protect the ozone layer by phasing out the production of several groups of halogenated hydrocarbons believed to be responsible for $O_3$ depletion and which are also potent GHGs.

The ARB estimates that transportation was the source of approximately 36 percent of the State's GHG emissions in 2014, followed by electricity generation (both in-State and out-of-State) at 20 percent and industrial sources at 21 percent. The remaining sources of GHG emissions were residential and commercial activities at 9 percent, agriculture at 8 percent, high-GWP gases at 4 percent, and recycling and waste at 2 percent (ARB 2016).

The ARB is responsible for developing the State GHG Emission Inventory. This inventory estimates the amount of GHGs emitted to and removed from the atmosphere by human activities within the State and supports the Assembly Bill (AB) 32 Climate Change Program. The ARB's current GHG emission inventory covers the years 1990–2013 and is based on fuel use, equipment activity, industrial processes, and other relevant data (e.g., housing, landfill activity, agricultural lands).

The ARB staff has projected Statewide unregulated GHG emissions for 2020, which represent the emissions that would be expected to occur in the absence of any GHG reduction actions, at 509 $MMTCO_2e$. GHG emissions from the transportation and electricity sectors as a whole are expected to increase but remain at approximately 30 percent and 32 percent of total $CO_2e$ emissions, respectively (ARB 2016).

### Air Pollution Constituents and Attainment Status

The ARB coordinates and oversees both State and federal air pollution control programs in the State. The ARB oversees activities of local air quality management agencies and maintains air quality monitoring stations throughout the State in conjunction with the EPA and local air districts. The ARB has divided the State into 15 air basins based on meteorological and topographical factors of air pollution. Data collected at these stations are used by the ARB and EPA to classify air basins as attainment, nonattainment, nonattainment-transitional, or unclassified, based on air quality data for the most recent three calendar years compared with the AAQS.

Attainment areas may be:

- Attainment/Unclassified ("Unclassifiable" in some lists), which have never violated the air quality standard of interest or do not have enough monitoring data to establish attainment or nonattainment status; or
- Attainment-Maintenance (NAAQS only), which violated a NAAQS that is currently in use (was Nonattainment) in or after 1990, but now attains the standard and is officially redesignated to Attainment by the EPA with a Maintenance State Implementation Plan (SIP); or
- Attainment (usually only for CAAQS, but sometimes for NAAQS), which have adequate monitoring data to show attainment, have never been nonattainment, or, for NAAQS, have completed the official Maintenance period.

Nonattainment areas are imposed with additional restrictions as required by the EPA. The air quality data are also used to monitor progress in attaining air quality standards. Table D lists the attainment status for the criteria pollutants in the MDAB.

**Table D: Attainment Status of Criteria Pollutants in the Mojave Desert Air Basin**

| Pollutant | State | Federal |
|---|---|---|
| $O_3$ 1-hour | Nonattainment | N/A |
| $O_3$ 8-hour | Nonattainment | Severe Nonattainment |
| $PM_{10}$ | Nonattainment | Moderate Nonattainment |
| $PM_{2.5}$ | Nonattainment | Attainment/Unclassifiable |
| CO | Attainment | Attainment/Unclassifiable |
| $NO_2$ | Attainment | Attainment/Unclassifiable |
| $SO_2$ | Attainment | Attainment/Unclassifiable |
| Lead | Attainment | Attainment |
| All others | Attainment/Unclassified | N/A |

Source: California Air Resources Board. Air Quality Standards and Area Designations. Website: http://www.arb.ca.gov/desig/desig.htm, accessed May 2017.

CO = carbon monoxide
N/A = not applicable
$NO_2$ = nitrogen dioxide
$O_3$ = ozone
$PM_{10}$ = particulate matter less than 10 microns in size
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
$SO_2$ = sulfur dioxide

*Ozone*

$O_3$ (smog) is formed by photochemical reactions between oxides of nitrogen and reactive organic gases (ROGs) rather than being directly emitted. $O_3$ is a pungent, colorless gas typical of Southern California smog. Elevated $O_3$ concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors such as the sick, the elderly, and young children. $O_3$ levels peak during summer and early fall. (The EPA has officially designated the status for the western MDAB regarding the 8-hour $O_3$ standard as severe nonattainment, which means the MDAB has until 2019 to attain the federal 8-hour $O_3$ standard.)

*Particulate Matter*

Particulate matter (PM) is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles ($PM_{10}$) derive from a variety of sources, including windblown dust and grinding operations. Fuel combustion and resultant exhaust from power plants and diesel buses and trucks are primarily responsible for fine particle ($PM_{2.5}$) levels. Fine particles can also be formed in the atmosphere through chemical reactions. $PM_{10}$ can accumulate in the respiratory system and aggravate health problems such as asthma. The EPA's scientific review concluded that $PM_{2.5}$, which penetrate deeply into the lungs, are more likely than coarse particles to contribute to the health effects listed in a number of recently published community epidemiological studies at concentrations that extend well below those allowed by the current $PM_{10}$ standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms (California Environmental Protection Agency [CalEPA] 2002). The MDAB is designated

moderate nonattainment for the federal and State $PM_{10}$ standards, and attainment/unclassifiable for the federal $PM_{2.5}$ standard.

*Carbon Monoxide*

CO is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. The entire MDAB is in attainment for the State standard for CO. The MDAB is designated as an attainment/unclassifiable area under the federal CO standard.

*Nitrogen Oxides*

$NO_2$, a reddish-brown gas, and nitric oxide (NO), a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to as nitrogen oxides, or NOx. NOx is a primary component of the photochemical smog reaction. It also contributes to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition (i.e., acid rain). $NO_2$ decreases lung function and may reduce resistance to infection. The entire MDAB is designated as attainment for the State $NO_2$ standard and as an attainment/unclassifiable area under the federal $NO_2$ standard.

*Sulfur Dioxide*

$SO_2$ is a colorless irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous $SO_2$ levels. $SO_2$ irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight. The entire MDAB is in attainment with both federal and State $SO_2$ standards.

*Lead*

Lead is found in old paints and coatings, plumbing, and a variety of other materials. Once in the blood stream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The MDAB is in attainment/unclassifiable for the State and federal standards for lead in 2010.

*Volatile Organic Compounds*

Volatile organic compounds (VOCs; also known as ROGs, and reactive organic compounds [ROCs]) are formed from the combustion of fuels and the evaporation of organic solvents. VOCs are not defined as criteria pollutants; however, because VOCs accumulate in the atmosphere more quickly during the winter when sunlight is limited and photochemical reactions are slower, they are a prime component of the photochemical smog reaction. There are no attainment designations for VOCs.

*Sulfates*

Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to $SO_2$ during the combustion process and subsequently is converted to sulfate compounds in the atmosphere. The conversion of $SO_2$ to

sulfates takes place comparatively rapidly and completely in urban areas of the State due to regional meteorological features. The entire MDAB is in attainment for the State standard for sulfates.

*Hydrogen Sulfide*

$H_2S$ is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. In addition, it can be present in sewer gas and some natural gas and can be emitted as the result of geothermal energy exploitation. In 1984, an ARB committee concluded that the ambient standard for $H_2S$ is adequate to protect public health and to significantly reduce odor annoyance. The entire MDAB is unclassified for the State standard for $H_2S$.

*Visibility-Reducing Particles*

Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size, and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt. The statewide standard is intended to limit the frequency and severity of visibility impairment due to regional haze. The entire MDAB is unclassified for the State standard for visibility-reducing particles.

**Toxic Air Contaminants**

The public's exposure to toxic air contaminants (TACs) is a significant environmental health issue in the State. In 1983, the State Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The Health and Safety Code defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant pursuant to subsection (b) of Section 112 of the Federal Act (42 United States Code [USC] Section 7412[b]) is a TAC. Under State law, the CalEPA, acting through the ARB, is authorized to identify a substance as a TAC if it determines the substance is an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or that may pose a present or potential hazard to human health.

The State regulates TACs primarily through AB 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for ARB to designate substances as TACs. Once a TAC is identified, the ARB adopts an "airborne toxics control measure" for sources that emit designated TACs. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology (T-BACT) to minimize emissions.

Air toxics from stationary sources are also regulated in the State under the Air Toxics "Hot Spot" Information and Assessment Act of 1987. Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a health risk assessment and, if specific thresholds are exceeded, required to communicate the results to the public in the form of notices and public meetings.

To date, the ARB has designated nearly 200 compounds as TACs. Additionally, the ARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs at gasoline service station can be attributed to relatively few compounds, the most important being benzene.

## LOCAL AIR QUALITY

The MDAQMD, together with the ARB, maintains ambient air quality monitoring stations in the MDAB. The air quality monitoring station closest to the site is the Victorville station, located at 14306 Park Avenue in the City of Victorville, which monitors most air pollutant data, except CO and $SO_2$, which were not available. The air quality trends from the Victorville station is used to represent the ambient air quality in the project area. The pollutants monitored are $O_3$, $PM_{10}$, $PM_{2.5}$, and $NO_2$ (ARB 2014–2016). The ambient air quality data in Table E show that federal and State annual average $NO_2$ and $PM_{2.5}$ are below the applicable State and federal standards.

The State 1-hour $O_3$ standard was exceeded up to eight times per year in the past three years. The federal 8-hour $O_3$ standard was exceeded up to 38 days in the past three years, and the State 8-hour $O_3$ standard was exceeded up to 40 times in the past three years. The 24-hour and annual $PM_{10}$ standards were exceed in the past three years.

**Table E: Ambient Air Quality Monitored in the Project Vicinity**

| Pollutant | Standard | 2014 | 2015 | 2016 |
|---|---|---|---|---|
| **Ozone ($O_3$) – taken from Victorville station** | | | | |
| Maximum 1-hr concentration (ppm) | | 0.122 | 0.132 | 0.100 |
| Number of days exceeded: | State: > 0.09 ppm | 3 | 8 | 4 |
| Maximum 8-hr concentration (ppm) | | 0.096 | 0.088 | 0.074 |
| Number of days exceeded: | State: > 0.07 ppm | 40 | 39 | 35 |
| | Federal: > 0.070 ppm[1] | 38 | 38 | 33 |
| **Coarse Particulates ($PM_{10}$) – taken from Victorville station** | | | | |
| Maximum 24-hr concentration (µg/m3) | | 246.2 | 100.8 | 109.2 |
| Number of days exceeded: | State: > 50 µg/m$^3$ | 1 | 1 | 1 |
| | Federal: > 150 µg/m$^3$ | 1 | 0 | 0 |
| Annual arithmetic average concentration (µg/m$^3$) | | 30.2 | 24.9 | 23.5 |
| Exceeded for the year: | State: > 20 µg/m$^3$ | Yes | Yes | Yes |
| **Fine Particulates ($PM_{2.5}$) – taken from Victorville station** | | | | |
| Maximum 24-hr concentration (µg/m$^3$) | | 24.1 | 50.2 | ND |
| Number of days exceeded: | Federal: > 35 µg/m$^3$ | 0 | 1 | 0 |
| Annual arithmetic average concentration (µg/m3) | | ND | 6.6 | ND |
| Exceeded for the year: | State: > 12 µg/m$^3$ | 0 | 0 | 0 |
| | Federal: > 12 µg/m$^3$ | 0 | 0 | 0 |
| **Nitrogen Dioxide ($NO_2$) – taken from Victorville station** | | | | |
| Maximum 1-hr concentration (ppm) | | 0.066 | 0.118 | 0.097 |
| Number of days exceeded: | State: > 0.18 ppm | 0 | 0 | 0 |

**Table E: Ambient Air Quality Monitored in the Project Vicinity**

| Pollutant | Standard | 2014 | 2015 | 2016 |
|---|---|---|---|---|
| Annual arithmetic average concentration (ppm) | | 0.013 | 0.010 | 0.010 |
| Exceeded for the year: | State: > 0.030 ppm | 0 | 0 | 0 |
| | Federal: > 0.053 ppm | 0 | 0 | 0 |

Source 1: United States Environmental Protection Agency (EPA). AirData Monitor Value Reports 2016. Website: https://www3.epa.gov/airdata/ad_rep_mon.html, accessed May 2017.
Source 2: California Air Resources Board (ARB). IADAM: Air Quality Data Statistics. Website: http://www.arb.ca.gov/adam/welcome.html, accessed May 2017.

[1] The exceedances of the federal 8-hr $O_3$ standard are based on the old 0.075 ppm standard. In October 2015, the EPA revised the standard to 0.070 ppm.
[2] ND = No data available.

$\mu g/m^3$ = micrograms per cubic meter
hr = hour
$PM_{10}$ = particulate matter less than 10 microns in size
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
ppm = parts per million

### Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases.

Residential areas are also considered sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods, resulting in sustained exposure to any pollutants present. Other sensitive receptors include retirement facilities, hospitals, and schools. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial, commercial, retail, and office areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, because the majority of the workers tend to stay indoors most of the time. In addition, the workforce is generally the healthiest segment of the population.

## REGULATORY SETTINGS

### Federal Regulations/Standards

Pursuant to the Clean Air Act (CAA) of 1970, the EPA established the NAAQS. The NAAQS were established for six major pollutants, termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the federal and State governments have established AAQS, or criteria, for outdoor concentrations in order to protect public health.

Data collected at permanent monitoring stations are used by the EPA to classify regions as "attainment" or "nonattainment," depending on whether the regions met the requirements stated in the primary NAAQS. Nonattainment areas are imposed with additional restrictions as required by the EPA. The EPA has designated the Southern California Association of Governments (SCAG) as the

Metropolitan Planning Organization (MPO) responsible for ensuring compliance with the requirements of the CAA for the MDAB.

### State Regulations and Standards

In 1967, the State Legislature passed the Mulford-Carrell Act, which combined two Department of Health bureaus, the Bureau of Air Sanitation and the Motor Vehicle Pollution Control Board, to establish the ARB. Since its formation, the ARB has worked with the public, the business sector, and local governments to find solutions to the State's air pollution problems.

California adopted the California Clean Air Act (CCAA) in 1988. The ARB administers CAAQS for the 10 air pollutants designated in the CCAA. The 10 State air pollutants are the six criteria pollutants designated by the CAA plus visibility-reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride.

The ARB identified benzene as a TAC in January 1985. Following the identification process, the ARB was required by law to determine whether there was a need for further control. In May 1997, the ARB adopted the *Airborne Toxic Control Measure for Emissions of Benzene from Retail Service Stations*, which recommends many control measures to reduce the risks associated with benzene and to achieve goals of 90 percent risk reduction by 2000.

The public's exposure to TACs is a significant environmental health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. Under State law, CalEPA, acting through the ARB, is authorized to identify a substance as a TAC if it determines the substance is an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or that may pose a present or potential hazard to human health.

- **Cancer Risk:** One of the primary health risks of concern due to exposure to TACs is the risk of contracting cancer. The carcinogenic potential of TACs is a particular public health concern because it is currently believed by many scientists that there is no "safe" level of exposure to carcinogens; that is, any exposure to a carcinogen poses some risk of causing cancer. Health statistics show that one in four people will contract cancer over their lifetime, or 250,000 in one million, from all causes, including diet, genetic factors, and lifestyle choices.
- **Non-Cancer Health Risks:** Unlike carcinogens, it is believed that there is a threshold level of exposure to most noncarcinogens below which they will not pose a health risk. CalEPA and the Office of Environmental Health Hazard Assessment (OEHHA) have developed reference exposure levels (RELs) for non-carcinogenic TACs that are health-conservative estimates of the levels of exposure at or below which health effects are not expected. The non-cancer health risk due to exposure to a TAC is assessed by comparing the estimated level of exposure to the Reference Exposure Level (REL). The comparison is expressed as the ratio of the estimated exposure level to the REL, called the hazard index (HI).

*California Climate Action Milestones*

The California Global Warming Solutions Act of 2006, best known by its bill number AB 32, created a first-in-the country comprehensive program to achieve real, quantifiable, and cost-effective reductions in GHGs. The law set an economy-wide cap on the State's GHG emissions at 1990 levels by 2020. It directed the ARB to prepare, approve, and implement a Scoping Plan for achieving the maximum technologically feasible and cost-effective reductions in GHG emissions. 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 and 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.

As codified in 2008, SB 97 required the Governor's Office of Planning and Research (OPR) to develop GHG emissions criteria to be used in determining project impacts under CEQA. These criteria were developed in 2009 and went into effect in 2010.

SB 32, which was signed into law on September 19, 2016, updated AB 32 to meet year 2030 targets and included a mandate to reduce GHG emissions to 40 percent below 1990 levels by 2030.

The initiatives, executive orders, and statutes outlined above comprise the major milestones in California's efforts to address climate change through coordinated action on climate research, GHG mitigation, and climate change adaptation.

### Regional Air Quality Planning Framework

The 1976 Lewis Air Quality Management Act established the MDAQMD and other air districts throughout the State. The CAA Amendments of 1977 required that each state adopt an implementation plan outlining pollution control measures to attain the federal standards in nonattainment areas.

The ARB is responsible for incorporating Air Quality Attainment Plans (AQAPs) for local air basins into an SIP for EPA approval. Significant authority for air quality control within them has been given to local air districts that regulate stationary-source emissions and develop local nonattainment plans.

### Regional Air Quality Attainment Plans

*Federal Ozone Standard Attainment Plan*

The Community of Helendale is within the Western Mojave Desert federal nonattainment area for 8-hour ozone. On February 17, 2017, the MDAQMD adopted a federal 75 part per billion (ppb) 8-Hour Ozone Attainment Plan (OAP) for the Western Mojave Desert nonattainment area (MDAQMD 2017). The Western Mojave Desert federal nonattainment area includes part of the San Bernardino County portion of the MDAQMD as well as the Antelope Valley portion of Los Angeles County. The area was designated as nonattainment on April 15, 2004. The update OAP (1) demonstrates that the MDAQMD will meet the primary required federal ozone planning milestones and achieve attainment of the 8-hour ozone federal ambient air quality standard by July 2027; (2) presents the

progress the MDAQMD will make toward meeting all required ozone planning milestones; and (3) discusses the strategies to comply with the 75 ppb federal 8-hour ozone ambient air quality standard.

*Federal $PM_{10}$ Standard Attainment Plan*

On July 31, 1995, a Federal Particulate Matter ($PM_{10}$) Attainment Plan for the Mojave Desert Planning Area was adopted (MDAQMD 1995). The $PM_{10}$ Plan indicates that local sources will be controlled with a strategy that focuses on unpaved road travel, construction and local disturbed areas in the populated areas, and certain stationary sources operating in the rural Lucerne Valley.

**Local Regulations/Standards**

The proposed project is located within the jurisdiction of the MDAQMD and is subject to specific MDAQMD prohibitory regulations listed below.

- Rule 401 – Visible Emissions. This rule is stricter than California Health and Safety Code Section 41701. Rule 401 limits the opacity of exhaust into the atmosphere darker than 20 percent opacity to no more than an aggregate of three minutes in any one hour.
- Rule 402 – Nuisance. This rule implements the nuisance requirements of California Health and Safety Code Section 41700. Rule 402 prohibits the discharge of air contaminants that cause injury, detriment, nuisance, or annoyance to any considerable number of people or damage to any business or property.
- Rule 403 – Fugitive Dust. Rule 403 prohibits the emissions of fugitive dust from any transport, handling, construction, or storage activity that remains visible beyond the property line of the emission source.
- Rule 403.2 – Fugitive Dust Control, Mojave Desert Planning Area. Rule 403.2 includes dust control requirements for watering of unpaved roads, minimizing trackout onto unpaved surfaces, stabilizing graded surfaces, conveyor and transfer point dust controls, and other similar dust controls for projects in the Mojave Desert Planning Area.
- Rule 461 – Gasoline Transfer and Dispensing. Rule 461 places limits and controls on the liquid fuels transfer and dispensing at gas stations.

The MDAQMD adopted significance thresholds for criteria pollutants and toxic air contaminants in 2009. These include significant emissions thresholds, project health risk significance thresholds, and other significance thresholds. The County of San Bernardino has not adopted its own CEQA thresholds for air quality impacts.

**This Page Intentionally Left Blank**

# THRESHOLDS OF SIGNIFICANCE

A number of modeling tools are available to assess air quality impacts of projects. In addition, certain air districts, such as the MDAQMD, have created guidelines and requirements to conduct air quality analysis. The MDAQMD's current guidelines, the *CEQA and Federal Conformity Guidelines* (MDAQMD 2016) with associated updates, and County of San Bernardino General Plan were followed in the assessment of air quality impacts for the proposed project. The current air quality model (California Emissions Estimator Model [CalEEMod] Version 2016.3.1) was used to estimate project-related mobile- and stationary-source emissions in this analysis.

This air quality and GHG analysis includes estimated emissions associated with short-term construction and long-term operation of the proposed project. Criteria pollutants with regional impacts would be emitted by project-related vehicular trips, as well as by emissions associated with stationary sources used on site. Localized air quality impacts would be small and less than significant due to the generally low ambient air pollutant concentrations in the project area.

The net increase in pollutant emissions determines the significance and impact on regional air quality as a result of the proposed project. The results also allow the local government to determine whether the proposed project will deter the region from achieving the goal of reducing pollutants in accordance with the AQMP in order to comply with the NAAQS and CAAQS.

## STATE CEQA GUIDELINES

Based on *Guidelines for the Implementation of California Environmental Quality Act,* Appendix G, Public Resources Code (PRC) Sections 15000–15387, a project would normally be considered to have a significant effect on air quality if the project would violate any CAAQS, contribute substantially to an existing air quality violation, expose sensitive receptors to substantial pollutants concentrations, or conflict with adopted environmental plans and goals of the community in which it is located.

The following significance thresholds are contained in Appendix G of the CEQA Guidelines. A significant impact would occur if a project would:

a) Conflict with or obstruct implementation of the applicable air quality plan;

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);

d) Expose sensitive receptors to substantial pollutant concentrations; or

e) Create objectionable odors affecting a substantial number of people.

CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine if a project would have a significant

impact on air quality, the type, level and impact of emissions generated by the project must be evaluated.

### Mojave Desert Air Quality Management District Thresholds

The MDAQMD has established daily emissions thresholds for construction and operation for the evaluation of the proposed project in the MDAB. It should be noted that the emissions thresholds were established based on the attainment status of the air basin in regard to air quality standards for specific criteria pollutants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety (EPA 2016), these emissions thresholds are regarded as conservative and would overstate an individual project's contribution to health risks.

The County utilizes the MDAQMD *CEQA and Federal Conformity Guidelines* (August 2011) to identify potentially significant impacts on air quality. For the purposes of this analysis, an impact is considered significant if a project:

1. Generates total emissions (direct and indirect) in excess of the thresholds given in Table F;
2. Generates a violation of any ambient air quality standard when added to the local background;
3. Does not conform with the applicable attainment or maintenance plan(s);[1] or
4. Exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to ten in a million, and/or a health index (non-cancerous) greater than or equal to one.

**Table F: MDAQMD Thresholds of Significance**

| Pollutant | Annual Threshold (tons per year) | Daily Threshold (pounds per day) |
|---|---|---|
| Carbon Monoxide (CO) | 100 | 548 |
| Oxides of Nitrogen (NOx) | 25 | 137 |
| Volatile organic compounds (VOC) | 25 | 137 |
| Oxides of sulfur (SOx) | 25 | 137 |
| Particulate matter ($PM_{10}$) | 15 | 82 |
| Particulate matter ($PM_{2.5}$) | 15 | 82 |
| Hydrogen Sulfide ($H_2S$) | 10 | 54 |
| Lead (Pb) | 0.6 | 3 |

Source: MDAQMD 2011

The MDAQMD significance thresholds are based on either daily or total annual air pollutant emissions, i.e., the amount of air pollutants generated from construction and operation of the

[1] A project is deemed to not exceed this threshold, and hence not be significant, if it is consistent with the existing land use plan. Zoning changes, specific plans, general plan amendments, and similar land use plan changes, which do not increase dwelling unit density, do not increase vehicle trips, and do not increase vehicle miles traveled, are also deemed to not exceed this threshold.

proposed project during a 12-month period. For multi-phased projects, such as projects with separate construction and operational phases, phases shorter than one year can be compared to the daily value. MDAQMD thresholds are the same for construction and operation. If emissions exceed the thresholds, then a project is considered to have a significant impact on air quality and must incorporate all feasible mitigation measures.

Projects in the MDAB with operational emissions that exceed any of these emission thresholds are considered to be significant under the MDAQMD guidelines.

### Sensitive Receptor Land Uses

Residences, schools, daycare centers, playgrounds, and medical facilities are considered sensitive receptor land uses. The following project types proposed for sites within the specified distance to an existing or planned (zoned) sensitive receptor land use must be evaluated using significance threshold criterion number 4 (see above):

- Any industrial project within 1,000 feet;
- A distribution center (40 or more trucks per day) within 1,000 feet;
- A major transportation project (50,000 or more vehicles per day) within 1,000 feet;
- A dry cleaner using perchloroethylene within 500 feet; or
- A gasoline dispensing facility within 300 feet.

### Carbon Monoxide Concentration

Project impacts are considered significant if project-generated CO concentrations cause a localized violation of the California 1-hour standard of 20 parts per million (ppm) or 8-hour standard of 9 ppm.

### Objectionable Odors

A project would have a significant impact if it would generate objectionable odors or place sensitive receptors next to existing objectionable odors that would affect a considerable number of persons or the public.

## THRESHOLDS FOR TOXIC AIR CONTAMINANTS

The ARB has developed an *Air Quality and Land Use Handbook* (ARB 2005), which is intended to serve as a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. According to the ARB Handbook, recent air pollution studies have shown an association between respiratory and other non-cancer health effects and proximity to high-traffic roadways. Other studies have shown that diesel exhaust and other cancer-causing chemicals emitted from diesel-powered construction equipment, automobiles, trailer trucks, marine vessels, and locomotives are responsible for much of the overall cancer risk from airborne toxics in California. The ARB Handbook recommends that planning agencies strongly consider proximity to these sources when finding new locations for "sensitive" land uses such as homes, medical facilities, daycare centers, schools, and playgrounds.

Air pollution sources of concern include freeways, rail yards, ports, refineries, distribution centers, chrome plating facilities, dry cleaners, and large gasoline service stations. Key recommendations in the ARB Handbook include taking steps to avoid siting new, sensitive land uses:

- Within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles/day;
- Within 1,000 feet of a major service and maintenance rail yard;
- Immediately downwind of ports (in the most heavily impacted zones) and petroleum refineries;
- Within 300 feet of any dry-cleaning operation (for operations with two or more machines, provide 500 feet); or
- Within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater).

The ARB Handbook specifically states that its recommendations are advisory and acknowledges land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

As indicated, the ARB recommends taking steps to avoid locating new housing within 300 feet of a gasoline dispensing station. The recommendations are generalized and do not consider site-specific meteorology, number of gasoline dispenser pumps, or other factors that influence risk for a particular project site. The purpose of this analysis is to examine further the project site for actual health risks associated with the location of the existing residences surrounding the project site. The proposed project would locate the gasoline and diesel storage tanks within 300 feet of existing residential units.

## THRESHOLDS FOR POLLUTANTS THAT AFFECT GLOBAL CLIMATE CHANGE

State CEQA Guidelines Section 15064(b) provides that the "determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data," and, further, states that an "ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

The thresholds for GHG emission impact analysis are consistent with Appendix G of the State CEQA Guidelines. A project would normally have a significant effect on the environment if the project would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

On December 30, 2009, the Natural Resources Agency adopted amendments to the State CEQA Guidelines that became effective on March 18, 2010. The amendments to the State CEQA Guidelines

include new requirements to evaluate GHG emissions. Pursuant to the amended State CEQA Guidelines, a lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment:

1. The extent to which the project may increase (or reduce) GHG emissions compared to the existing environmental setting;
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and
3. The extent to which the project complies with regulations or requirements adopted to implement an adopted statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

The MDAQMD has adopted CEQA significance thresholds, which can be found in its *CEQA and Federal Conformity Guidelines*, dated August 2016. MDAQMD's CEQA GHG significance threshold is 100,000 metric tons/year (MT/year) of $CO_2e$. San Bernardino County adopted a *Greenhouse Gas Reduction Plan* with a performance standard of 31 percent for certain discretionary development projects within the unincorporated county with emissions more than 3,000 $MTCO_2e$/year. Projects with less than 3,000 $MTCO_2e$/year are still required to meet certain specified performance measures that also result in GHG emission reductions. Therefore, the more conservative GHG emissions threshold of 3,000 MT/year of $CO_2e$ from the County will be applied to the project.

**This Page Intentionally Left Blank**

# IMPACTS AND MITIGATION

Air pollutant emissions associated with the project would occur over the short term from construction activities, such as fugitive dust from site preparation and grading, and emissions from equipment exhaust. There would be long-term regional emissions associated with project-related vehicular trips and due to energy consumption, such as electricity usage by the proposed land uses.

## CONSTRUCTION IMPACTS

### Equipment Exhausts and Related Construction Activities

Typical construction impacts would be associated with site preparation, grading, building construction, paving, and architectural coating. Construction activities produce combustion emissions from various sources from equipment engines and motor vehicles transporting the construction crew and materials. Exhaust emissions from construction activities would vary daily as construction activity levels change. Table G lists the tentative project construction schedule for the proposed project based on a potential calendar start date of 2018, a planned opening in 2019. It should be noted that the CalEEMod uses the size of the development to determine the default number of construction days for each construction phase. The tentative calendar start and end dates are displayed to show the length of the potential construction period.

**Table G: Tentative Project Construction Schedule**

| Task | Phase Name | Phase Start Date | Phase End Date | Number of Working Days/Week | Number of Days |
|---|---|---|---|---|---|
| 1 | Site Preparation | 1/2/2018 | 1/2/2018 | 5 | 1 |
| 2 | Grading | 1/3/2018 | 1/4/2018 | 5 | 2 |
| 3 | Building Construction | 1/5/2018 | 5/24/2018 | 5 | 100 |
| 4 | Paving | 5/25/2018 | 5/31/2018 | 5 | 5 |
| 6 | Architectural Coating | 6/1/2018 | 6/7/2018 | 5 | 5 |

Sources: Anticipated Construction Schedule, assuming California Emissions Estimator Model (CalEEMod) defaults for phasing.

Table H lists the potential construction equipment to be used during project construction during each project phase. Details of the emission factors and other assumptions are included in Appendix A.

The most recent version of CalEEMod (Version 2016.3.1) was used to calculate the construction emissions. Results from the model are shown in Appendix A. Table I presents the combination of the on- and off-site construction emissions.

Since no exceedances of any criteria pollutants are expected, no significant impacts would occur for project construction.

## Table H: Diesel Construction Equipment Utilized by Construction Phase

| Construction Phase | Off-Road Equipment Type | Off-Road Equipment Unit Amount | Hours Used per Day | Horsepower | Load Factor |
|---|---|---|---|---|---|
| Site Preparation | Graders | 1 | 8 | 187 | 0.41 |
| | Tractors/Loaders/Backhoes | 1 | 8 | 97 | 0.37 |
| Grading | Concrete/Industrial Saws | 1 | 8 | 81 | 0.73 |
| | Rubber Tired Dozers | 1 | 1 | 247 | 0.40 |
| | Tractors/Loaders/Backhoes | 2 | 6 | 97 | 0.37 |
| Building Construction | Cranes | 1 | 4 | 231 | 0.29 |
| | Forklifts | 2 | 6 | 89 | 0.20 |
| | Tractors/Loaders/Backhoes | 2 | 6 | 97 | 0.37 |
| Paving | Cement and Mortar Mixers | 4 | 6 | 9 | 0.56 |
| | Pavers | 1 | 7 | 130 | 0.42 |
| | Rollers | 1 | 7 | 80 | 0.38 |
| | Tractors/Loaders/Backhoes | 1 | 8 | 97 | 0.37 |
| Architectural Coating | Air Compressors | 1 | 6 | 78 | 0.48 |

Source: Compiled by LSA using California Emissions Estimator Model (CalEEMod) defaults list of construction equipment (May 2017).

## Table I: Regional Construction Emissions (Daily and Annual)

| | Total Regional Pollutant Emissions (lbs/day) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Construction Phase | VOC | NOx | CO | SOx | Fugitive $PM_{10}$ | Exhaust $PM_{10}$ | Fugitive $PM_{2.5}$ | Exhaust $PM_{2.5}$ |
| **Daily 2017 Construction Phase** | | | | | | | | |
| Site Preparation | 0.81 | 9.78 | 4.47 | 0.01 | 0.25 | 0.42 | 0.03 | 0.38 |
| Grading | 1.12 | 9.47 | 8.20 | 0.01 | 0.38 | 0.62 | 0.18 | 0.59 |
| Building Construction | 1.13 | 11.43 | 8.09 | 0.01 | 0.07 | 0.71 | 0.02 | 0.65 |
| Paving | 1.15 | 8.81 | 8.00 | 0.01 | 0.15 | 0.51 | 0.04 | 0.47 |
| Architectural Coating | 25.03 | 2.01 | 1.90 | 0.00 | 0.01 | 0.15 | 0.00 | 0.15 |
| **Peak Daily** | **25.03** | **18.28** | **16.20** | **0.02** | **1.66** | | **1.29** | |
| **MDAQMD Daily Thresholds** | **137** | **137** | **548** | **137** | **82** | | **82** | |
| **Significant Emissions?** | **No** | **No** | **No** | **No** | **No** | | **No** | |
| **Annual 2018 Construction Phase** | Total Regional Pollutant Emissions (tons/year) | | | | | | | |
| Site Preparation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Building Construction | 1.53 | 25.18 | 20.16 | 0.04 | 1.21 | 0.82 | 0.33 | 0.82 |
| Paving | 1.39 | 11.60 | 10.23 | 0.01 | 0.15 | 0.40 | 0.04 | 0.40 |
| Architectural Coating | 13.95 | 2.41 | 2.54 | 0.01 | 0.20 | 0.10 | 0.05 | 0.10 |
| **Annual** | **18.41** | **64.36** | **53.09** | **0.11** | **4.92** | | **2.89** | |
| **MDAQMD Annual Thresholds** | **25** | **25** | **100** | **25** | **15** | | **15** | |
| **Significant Emissions?** | **No** | **No** | **No** | **No** | **No** | | **No** | |

Source: Compiled by LSA (May 2017).
CO = carbon monoxide
lbs/day = pounds per day
tons/year = tons per year
$NO_X$ = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
$PM_{10}$ = particulate matter less than 10 microns in size
MDAQMD = Mojave Desert Air Quality Management District
$SO_X$ = sulfur oxides
VOC = volatile organic compounds

### Toxic Air Contaminants

Mobile source TAC emissions would be generated by heavy-duty equipment during construction. Diesel particulate matter (DPM) is known to contain high concentrations of carcinogenic compounds from diesel-fueled equipment. The risks associated with carcinogenic effects are typically evaluated based on a lifetime of chronic exposure (i.e., 24 hours per day, 7 days per week, 365 days per year for 30 years). Because the construction-related emissions of diesel exhaust would occur for up to 6 months, the construction activities would not result in long-term chronic lifetime exposure to diesel exhaust from heavy-duty diesel equipment. Therefore, air quality impacts related to exposure of sensitive receptors to substantial TAC concentrations would be less than adverse.

Therefore, construction of the proposed project is not anticipated to result in an elevated health risk to exposed persons given the short-term and transitory nature of construction-related diesel exposure. The project may create a nuisance for residences, patrons, and visitors to nearby businesses during hours of construction, but this impact is considered minimal because of the short-term and transitory nature of the construction period. Consequently, the human health impact of DPM risks associated with construction activities is considered to be less than significant.

### Odors

Heavy-duty equipment in the project area during construction would emit odors, primarily from the equipment exhaust. However, the construction activity would cease to occur after construction is completed. No other sources of objectionable odors have been identified for the proposed project and no mitigation measures are required.

MDAQMD Rule 402 regarding nuisances states: "A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property." The proposed uses are not anticipated to emit any objectionable odors. Therefore, objectionable odors posing a health risk to potential on-site and existing off-site uses would not occur as a result of the proposed project.

### Naturally Occurring Asbestos

The proposed project is located in San Bernardino County, which is not among the counties found to have serpentine and ultramafic rock in their soils (California Department of Conservation, n.d., accessed May 2017). Therefore, the potential risk for naturally occurring asbestos (NOA) during project construction is less than significant.

### Construction Emissions Summary

Previously referenced Table I shows that daily and annual regional construction emissions would not exceed the daily and annual thresholds of any criteria pollutant emission thresholds established by the MDAQMD, and during construction, there would be no locally significant impacts. Additionally, construction of the project would not expose sensitive receptors to substantial pollutant concentrations related to the exposure of DPM emissions during construction.

## LONG-TERM REGIONAL AIR QUALITY IMPACTS

### Long-Term Project Operational Emissions

Long-term air pollutant emission impacts are those associated with stationary sources and mobile sources involving any project-related changes. The proposed project would result in net increases in both stationary- and mobile-source emissions. The stationary-source emissions would come from fuel storage tanks, fuel dispensing pumps, and other sources, including the use of consumer products and solid waste. Mobile source emissions would come from patrons and employee vehicle and supply/delivery trucks.

*Stationary Sources*

The project would operate two aboveground propane fuel tanks and two 12,000-gallon underground gasoline/diesel tanks. For the purpose of the air quality analysis, it was assumed that the two 12,000-gallon fuel tanks (24,000 gallons total) would each contain two compartments with storage capacities of 9,000, 3,000, 7,200, and 4,800 gallons. With two 12,000-gallons tanks, it would take approximately 110 fuel delivery truck trips per year (i.e., by a 9,000-gallon two-axle fuel truck) to deliver an annual maximum of 1,000,000 gallons of fuel to the project site. The gas service facility would generate criteria pollutant emissions directly and indirectly, specifically by the fuel delivery trucks, VOC losses from the storage tank and dispensing system, and combustion of fuel in the vehicles.

All gasoline retail service stations under MDAQMD jurisdiction have Phase I and II vapor recovery systems to control gasoline emissions. Phase I vapor recovery refers to the collection of gasoline vapors displaced from storage tanks when cargo tank trucks make gasoline deliveries. Phase II vapor recovery systems control the vapors displaced from the vehicle fuel tanks during refueling. In addition, all gasoline is stored underground with valves installed on the tank vent pipes to further control gasoline emissions. Emissions from gasoline transfer and dispensing mainly occur during loading, breathing, refueling, and spillage.

According to the MDAQMD Annual Emission Reporting (AER) Program, the default organic emission factor for diesel fuel dispensing pump station with diesel storage and dispensing system is 1.27 pounds of VOC per thousand gallons of fuel dispensed (MDAQMD 2011). For purposes of the analysis of this project, it is assumed that the 12,000-gallon aboveground storage tank would contain diesel fuel and be filled three times throughout the year, resulting in an estimated annual VOC emissions of 30.46 pounds per year (i.e., 24,000 thousand gallons [Mgal] × 1.27 lb VOC per Mgal).

*Area Sources*

Area sources of air pollutant emissions include indirect emissions associated with fuel combustion used to generate electricity and provide space and water heating; from the embodied energy required to supply, treat, and distribute water, and treat the resulting wastewater; from combustion emissions from landscaping equipment; and from use of architectural coatings.

*Mobile Sources*

Based on trip generation estimates provided in the CalEEMod for the proposed project, 4,226 daily trips were projected.

Table J shows the long-term operational emissions associated with the existing site and the proposed project.

**Table J: Opening Year Regional Operational Emissions**

| Source | Pollutant Emissions (lbs/day) | | | | | |
|---|---|---|---|---|---|---|
| | VOC | NOx | CO | SOx | $PM_{10}$ | $PM_{2.5}$ |
| **Daily Operational Emissions** | | | | | | |
| Area Sources | 0.15 | <0.01 | <0.01 | 0.00 | <0.01 | <0.01 |
| Energy Sources | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Mobile Sources | 12.26 | 65.39 | 63.62 | 0.19 | 8.43 | 2.36 |
| Stationary Sources | 0.08 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Total Existing Emissions** | **12.49** | **65.62** | **63.62** | **0.19** | **8.43** | **2.36** |
| **MDAQMD Thresholds** | **137** | **137** | **548** | **137** | **82** | **82** |
| **Significant?** | **No** | **No** | **No** | **No** | **No** | **No** |
| **Annual Operational Emissions** | **Pollutant Emissions (tons/year)** | | | | | |
| Area Sources | 0.03 | <0.01 | 0.04 | 0.00 | <0.01 | <0.01 |
| Energy Sources | <0.01 | 0.26 | 0.22 | <0.01 | 0.02 | 0.02 |
| Mobile Sources | 1.22 | 8.03 | 7.87 | 0.02 | 1.02 | 0.29 |
| Stationary Sources | 0.002 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Total Project Emissions** | **1.33** | **8.03** | **7.87** | **0.02** | **1.02** | **0.29** |
| **MDAQMD Thresholds** | **25** | **25** | **100** | **25** | **15** | **15** |
| **Significant?** | **No** | **No** | **No** | **No** | **No** | **No** |

Source: Compiled by LSA (May 2017).

CO = carbon monoxide
lbs/day = pounds per day
tons/year = tons per year
$NO_X$ = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
$PM_{10}$ = particulate matter less than 10 microns in size
MDAQMD = Mojave Desert Air Quality Management District
$SO_X$ = sulfur oxides
VOC = volatile organic compounds

Results from the CalEEMod analysis, as shown in Table J, indicate the net increase of criteria pollutants resulting from the proposed project would not exceed the corresponding MDAQMD daily emission thresholds for any criteria pollutants. Therefore, project-related long-term air quality impacts would be less than significant.

## LONG-TERM MICROSCALE (CO HOTSPOT) ANALYSIS

As discussed below, the proposed project would not result in potentially adverse CO concentrations or hot spots. Further, detailed modeling of project-specific CO hot spots analysis is not necessary to reach this conclusion.

It has long been recognized that adverse localized CO concentrations ("hot spots") are caused by vehicular emissions, primarily when idling at congested intersections. In response, vehicle emissions standards have become increasingly stringent in the last 20 years. Currently, the allowable CO emissions standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent).

Several air districts have evaluated and concluded that under existing and future vehicle emission rates, a given project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact. The proposed project would not produce the volume of traffic required to generate a CO hot spot either in the context of the 2003 Los Angeles hot spot study, or based on representative Bay Area Air Quality Management District CO threshold considerations. It can therefore be reasonably concluded that the intersection of National Trail Highway and Vista Road is not subject to the extremes in vehicle volumes and vehicle congestion that was evidenced in the 2003 Los Angeles hot spot analysis and would similarly not create or result in CO hot spots.

Therefore, CO hot spots are not an environmental impact of concern for the proposed project. Localized air quality impacts related to mobile-source emissions would therefore be less than significant.

## LONG-TERM TOXIC AIR CONTAMINANTS ASSESSMENT

The California Air Pollution Control Officers Association (CAPCOA) has developed industrywide risk assessment guidelines for gasoline service stations (CAPCOA, 1997). The SCAQMD performed modeling following CAPCOA guidelines to estimate cancer risks from the industrywide source category of retail gasoline dispensing facilities. The SCAQMD's *Emission Inventory and Risk Assessment Guidelines for Gasoline Dispensing Stations* provides screening tables to determine the cancer risk based on the nearest residential and occupational location. The purpose of this analysis is to further examine the project site for actual health risk associated with the location of existing residences adjacent to the project site. The MDAQMD air quality permit condition for the gas station limits the annual amount of gasoline dispensed at maximum of 6.3 million gallons per year. Using the average annual gasoline dispense of one million gallons per year, residential cancer risk at less than 30 feet in distance would be 3.56 in one million. Appendix B presents the TAC and health risks calculations for the gasoline transfer and dispensing operation.

Results of the screening health risk assessment conclude that the cancer risk for the existing residence associated with exposure to gas station emissions would not exceed the significance criteria for toxic air contaminants as established by the MDAQMD. Therefore, the residents' exposure to the gas station emissions would be less than significant.

## IMPACTS FROM ODORS

Odors are not expected to substantially increase from existing conditions in the area due to the proposed project. Typically, odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from the

psychological (i.e., irritation, anger, or anxiety) to the physiological, including circulatory and respiratory effects, nausea, vomiting, and headache.

Neither the State nor the federal governments have adopted rules or regulations for the control of odor sources. The MDAQMD investigates odor complaints from the public. These complaints and the results of the MDAQMD investigations are recorded and kept on file.

The proposed project would include the fuel storage tanks and dispensing, which can be a source of odors. The proposed project would utilize the MDAQMD required emission control device on the fuel storage tanks and dispensing equipment. The fuel storage and dispensing operation is not considered significant because the emission source of the combustion emissions are from a mobile source and the fuel odor emitted would dissipate as the vehicle moves and would not be a constant source of odor. Considering the MDAQMD required emission control device for fuel dispensing equipment and storage tanks, it is anticipated that objectionable odors from the proposed project operation would be less than significant.

## GREENHOUSE GAS EMISSIONS

This section evaluates potential significant impacts to GCC that could result from implementation of the proposed project. Because it is not possible to tie specific GHG emissions to actual changes in climate, this evaluation focuses on the project's emission of GHGs. The County of San Bernardino has adopted a *Greenhouse Gas Reduction Plan* that is designed to reduce emissions of GHGs by 15 percent by 2020 to meet the requirements of AB 32.

Construction and operation of project development would generate GHG emissions, with the majority of energy consumption (and associated generation of GHG emissions) occurring during the project's operation (as opposed to during its construction).

Overall, the following activities associated with the proposed project could contribute directly or indirectly to the generation of GHG emissions:

- **Construction Activities:** During construction of the project, GHGs would be emitted through the operation of construction equipment and from worker and vendor vehicles, each of which typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as $CO_2$, $CH_4$, and $N_2O$. Furthermore, $CH_4$ is emitted during the fueling of heavy equipment.
- **Gas, Electricity, and Water Use:** Natural gas use results in the emission of two GHGs: $CH_4$ (the major component of natural gas) and $CO_2$ (from the combustion of natural gas). Electricity use can result in GHG production if the electricity is generated by combusting fossil fuel. California's water conveyance system is energy-intensive. Preliminary estimates indicate that the total energy used to pump and treat this water exceeds 6.5 percent of the total electricity used in the State per year (State of California 2008).
- **Solid Waste Disposal:** Solid waste generated by the project could contribute to GHG emissions in a variety of ways. Landfilling and other methods of disposal use energy for transporting and managing the waste, and they produce additional GHGs to varying degrees. Landfilling, the most common waste management practice, results in the release of $CH_4$ from the anaerobic decomposition of

organic materials. $CH_4$ is 25 times more potent a GHG than $CO_2$. However, landfill $CH_4$ can also be a source of energy. In addition, many materials in landfills do not decompose fully and the carbon that remains is sequestered in the landfill and not released into the atmosphere.

- **Motor Vehicle Use:** Transportation associated with the proposed project would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips.

GHG emissions associated with the project construction would occur over the short term from construction activities and would consist primarily of emissions from equipment exhaust. There would also be long-term regional emissions associated with project-related new vehicular trips and stationary-source emissions, such as natural gas used for heating and electricity usage for lighting. Preliminary guidance from OPR and recent letters from the Attorney General critical of CEQA documents that have taken different approaches indicate that lead agencies should calculate, or estimate, emissions from vehicular traffic, energy consumption, water conveyance and treatment, waste generation, and construction activities. The calculation presented below includes construction emissions in terms of $CO_2$ and annual $CO_2e$ GHG emissions from increased energy consumption, water usage, solid waste disposal, and estimated GHG emissions from vehicular traffic that would result from implementation of the project.

GHG emissions generated by the proposed project would predominantly consist of $CO_2$. In comparison to criteria air pollutants such as $O_3$ and $PM_{10}$, $CO_2$ emissions persist in the atmosphere for a substantially longer period. While emissions of other GHGs, such as $CH_4$, are important with respect to GCC, emission levels of other GHGs are less dependent on the land use and circulation patterns associated with the proposed land use development project than are levels of $CO_2$.

### Construction Greenhouse Gas Emissions

Construction activities produce combustion emissions from various sources, such as site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, asphalt paving, and motor vehicles transporting the construction crew. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change. Table K lists the annual $CO_2$ emissions for each of the planned construction phases. See the CalEEMod modeling output in Appendix A for details.

**Table K: Short-Term Regional Construction GHG Emissions**

| Construction Phase (2018) | Peak Annual Emissions (MT/yr) | | | |
|---|---|---|---|---|
| | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
| Site Preparation | 0.46 | <0.01 | 0.00 | 0.47 |
| Grading | 1.14 | <0.01 | 0.00 | 1.14 |
| Building Construction | 58.29 | 0.02 | 0.00 | 58.71 |
| Paving | 2.76 | <0.01 | 0.00 | 2.78 |
| Architectural Coating | 0.66 | <0.01 | 0.00 | 0.66 |
| Total Construction Emissions | | | | 63.75 |

Source: Compiled by LSA (May 2017).
$CH_4$ = methane
$CO_2$ = carbon dioxide
$CO_2e$ = carbon dioxide equivalent
MT of $CO_2e$ = metric tons of carbon dioxide equivalent
MT/yr = metric tons per year
$N_2O$ = nitrous oxide

As seen in Table K, the annual average GHG emissions are estimated to be approximately 63.75 MT $CO_2e$ per year for the year 2018; this is also substantially below the County's GHG threshold, which is 3,000 MT $CO_2e$ per year. Therefore, construction-related GHG impacts for the proposed project would be less than significant.

### Operational Greenhouse Gas Emissions

Long-term operation of the proposed project would generate GHG emissions from area and mobile sources and indirect emissions from stationary sources associated with energy consumption. Mobile-source emissions of GHGs would include project-generated vehicle trips associated with the facilities and customers/patrons to the project site. Area-source emissions would be associated with activities such as maintenance of proposed land uses, natural gas for heating, and other sources. Increases in stationary-source emissions would also occur at off-site utility providers as a result of demand for electricity, natural gas, and water by the proposed uses.

The GHG emission estimates presented in Table L show the emissions associated with the level of development envisioned by the proposed project at opening. Appendix A includes the CalEEMod model outputs. Area sources include architectural coatings, consumer products, and landscaping. Energy sources include natural gas consumption for heating.

**Table L: Long-Term Operational Greenhouse Gas Emissions**

| Source | Pollutant Emissions (MT/yr) | | | | | |
|---|---|---|---|---|---|---|
| | Bio-$CO_2$ | NBio-$CO_2$ | Total $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
| Area Sources | 0.00 | 0.01 | 0.01 | <0.01 | 0.00 | 0.01 |
| Energy Sources | 0.00 | 24.45 | 24.45 | <0.01 | <0.01 | 24.54 |
| Mobile Sources | 0.00 | 2,014.84 | 2,014.84 | 0.22 | 0.00 | 2,020.25 |
| Stationary Sources | 0.00 | <0.01 | <0.01 | <0.01 | <0.01 | 0.00 |
| Waste Sources | 3.05 | 0.00 | 3.05 | 0.18 | 0.00 | 7.56 |
| Water Usage | 0.12 | 2.34 | 2.46 | 0.01 | <0.01 | 2.85 |
| **Total Project Emissions** | **3.17** | **2,043.74** | **2,046.91** | **0.41** | **0.00** | **2,055.20** |

Source: Compiled by LSA (May 2017).

Note: Numbers in table may not appear to add up correctly due to rounding of all numbers to two significant digits.

Bio-$CO_2$ = biologically generated CO2
MT/yr = metric tons per year
$CH_4$ = methane
$N_2O$ = nitrous oxide
$CO_2$ = carbon dioxide
NBio-$CO_2$ = Non-biologically generated CO2
$CO_2e$ = carbon dioxide equivalent

As shown in Table L, the project will result in a net increase of 2,055 MT of $CO_2e$/yr, which is less than the County's GHG threshold of 3,000 MT of $CO_2e$/yr. Therefore, operational-related GHG impacts for the proposed project would be less than significant.

## AIR QUALITY MANAGEMENT PLAN CONSISTENCY

A consistency determination plays an essential role in local agency project review by linking local planning and unique individual projects to the air quality plans. It fulfills the CEQA goal of fully

Informing local agency decision-makers of the environmental costs of the project under consideration at a stage early enough to ensure that air quality concerns are addressed. Only new or amended General Plan elements, Specific Plans, and significantly unique projects need to undergo a consistency review due to the air quality plan strategy being based on projections from local General Plans.

The AQAP is based on regional growth projections developed by the SCAG. The proposed project is a commercial facility and is not defined as a regionally significant project under CEQA; therefore, it does not meet the SCAG's Intergovernmental Review (IGR) criteria.

In February 2017, MDAQMD adopted the Federal 75 ppb Ozone Attainment Plan (OAP). The intent of the OAP is to accommodate growth and to reduce the high levels of pollutants within the western MDAB. Projects that are consistent with the OAP would not interfere with attainment because the growth associated with them has been included in the projections utilized in the formulation of the OAP. Forecasts used in the OAP are developed by San Bernardino County Associated Governments (SANBAG), which are based on local general plans and other related documents that are used to develop population projections and traffic projections. Therefore, projects, uses, and activities that are consistent with the applicable assumptions used in the development of the OAP would not jeopardize attainment of the air quality levels identified in the OAP, even if they exceed the MDAQMD's recommended emissions thresholds. Conversely, projects that are inconsistent with the current land use plan may be consistent with the OAP if they do not increase land use density, increase vehicle trips, and do not increase vehicle miles traveled compared to what was assumed previously.

Projects that are consistent with the projections of employment and population forecasts identified in the Regional Transportation Plan prepared by the SCAG are considered consistent with the OAP growth projections, since the Growth Management Chapter forms the basis of the land use and transportation control portions of the OAP.

The project is proposed to consist of a gas station with 12 fueling stations and a convenience store, which would be inconsistent with the rural living (RL) zoned areas. The proposed project land use zoning change to general commercial (GC) would not exceed the applicable MDAQMD regional thresholds for construction-source and operational-source activity. As such, the proposed project would not conflict with the growth projections in the County General Plan.

Although the proposed project consists of increases in population and employment growth compared to the assumptions in the 2017 OAP, impacts with regard to consistency with the applicable air quality attainment plans (the OAP and $PM_{10}$ Attainment Plan) would be less than significant.

## CONSISTENCY WITH GHG REDUCTION PLANS

In 2008, the ARB approved a *Climate Change Scoping Plan*, as required by AB 32. The *Climate Change Scoping Plan* proposed a "comprehensive set of actions designed to reduce overall carbon GHG emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health." The *Climate Change*

*Scoping Plan* has a range of GHG reduction actions, which includes direct regulations, alternative compliance mechanisms, monetary and nonmonetary incentives, voluntary actions, market-based mechanisms (e.g., a cap-and-trade system), and an AB 32 implementation fee to fund the program. In May 2014, the ARB released the *First Update to the Climate Change Scoping Plan* (2014 Update). The 2014 Update identified nine key focus areas: energy, transportation, agriculture, water, waste management, natural and working lands, short-lived climate pollutants, green buildings, and the cap-and-trade program.

Green buildings offer a comprehensive approach to support the County's *Greenhouse Gas Emission Reduction Plan* and California's climate change goals across multiple sectors, including energy, water, waste, and transportation, while protecting the environment and public health. While building standards for new construction, additions, and alterations are useful to reduce the impacts of climate change, major renovations and sustainable operation of existing buildings offer the greatest potential to reduce building-related GHG emissions. The proposed project would comply with the 2016 Green Building Standards Code, which uses an integrated process to improve the design and construction of new buildings. The proposed project would require building designers and contractors to design and construct the new buildings in accordance with the Building Standards Code in effect at the time of construction (i.e., 2016 or future updates).

The proposed project would be required to comply with California's Green Building Code standards. Among the specific features that would be included in the proposed project are:

- A high-efficiency heating, ventilation, and air conditioning system;
- High-efficiency (low-flow) plumbing fixtures;
- Low-volatile-organic-compound paints and finishes;
- Use of high efficiency lighting system where feasible; and
- Dual-pane windows with at least two layers of low-emissivity (Low E) coating;

These features would foster, among other benefits, reductions in energy consumption, waste generation, and associated pollution. In addition, newer construction materials and practices, current energy efficiency requirements, and newer appliances would emit lower levels of air pollutant emissions, including GHGs, compared to materials and equipment used years ago.

The proposed project would be consistent with the applicable policies in the County's *Greenhouse Gas Emission Reduction Plan*. Therefore, the proposed project would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. Project impacts would be less than significant and no mitigation is required.

## CUMULATIVE IMPACTS

The project would contribute criteria pollutants to the area during temporary project construction. A number of individual projects in the area may be under construction simultaneously with the proposed project. Depending on construction schedules and actual implementation of projects in the area, generation of fugitive dust and pollutant emissions during construction could result in

substantial short-term increases in air pollutants. The proposed project's short-term construction emissions would not exceed the significance thresholds. Therefore, it will not have a significant short-term cumulative impact.

The project's long-term operational emissions would not exceed the County's criteria pollutant thresholds. Global climate change is inherently a cumulative issue, because no single project would be expected to result in a measurable change in global climate. The cumulative nature of climate change is considered by agencies in adopting significance thresholds, and adopted significance thresholds represents levels at which a project is considered cumulatively significant. As discussed above, the proposed project GHG emissions for both construction and operations would be below the GHG significance threshold. Therefore, the proposed project would not result in a significant long-term cumulative impact.

# REFERENCES

California Air Resources Board (ARB). 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. April.

———. 2014–2016 Air Quality Data. Website: http://www.arb.ca.gov, accessed May 2017.

———. 2014. First Update to the Climate Change Scoping Plan: Building on the Framework Pursuant to AB 32, the California Global Warming Solutions Act of 2006. Website: http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf, accessed May 2017.

———. 2016. Ambient Air Quality Standards. Website: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, accessed May 2017.

———. Air Quality Standards and Area Designations. Website: http://www.arb.ca.gov/desig/desig.htm, accessed May 2017.

———. ARB Fact Sheet: Air Pollution and Health. Website: http://www.arb.ca.gov/research/health/fs/fs1/fs1.htm, accessed May 2017.

———. Greenhouse Gas Inventory Data – 2016 Edition. Website: http://www.arb.ca.gov/cc/inventory/data/data.htm, accessed May 2017.

———. iADAM: Air Quality Data Statistics. Website: http://www.arb.ca.gov/adam/, accessed May 2017.

———. 2008a. *AB 32 Climate Change Scoping Plan* Document. December. Available at: https://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm accessed May 2017.

———. May 2014. First Update to the Climate Change Scoping Plan: Building on the Framework Pursuant to AB 32, the California Global Warming Solutions Act of 2006. Website: http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf, accessed May 2017.

California Department of Conservation, California Geological Survey. Asbestos. Website: http://www.conservation.ca.gov/cgs/minerals/hazardous_minerals/asbestos/Pages/index.aspx, accessed May 2017.

California Environmental Protection Agency (CalEPA), Office of Environmental Health Hazard Assessment (OEHHA), and American Lung Association of California. April 2002. Health Effects of Diesel Exhaust.

County of San Bernardino. 2011. San Bernardino County Greenhouse Gas Emissions Reduction Plan. September 2011. Website: http://www.sbcounty.gov/Uploads/lus/GreenhouseGas/FinalGHGFull.pdf, accessed May 2017.

———. 2007. San Bernardino County General Plan. April 12, 2007. Website: http://cms.sbcounty.gov/lus/planning/generalplan.aspx, accessed May 2017.

Intergovernmental Panel on Climate Change (IPCC). 2013. Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC. Website: http://www.ipcc.ch/report/ar5/wg1/, accessed May 2017.

Mojave Desert Air Quality Management District (MDAQMD). 2016. California Environmental Quality Act (CEQA) and Federal Conformity Guidelines. August.

———. 2017. Federal 75 ppb Ozone Attainment Plan (Western Mojave Desert Non-Attainment Area). February 17, 2017. Website: http://www.mdaqmd.ca.gov/Modules/ShowDocument.aspx?documentid=5563, accessed May 2017.

———. 2008. Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Non-Attainment Area). June 9, 2008. Website: http://www.mdaqmd.ca.gov/Modules/ShowDocument.aspx?documentid=40, accessed May 2017.

———. 1995. Federal Particulate Matter ($PM_{10}$) Attainment Plan. Website: http://www.mdaqmd.ca.gov/Modules/ShowDocument.aspx?documentid=42, accessed May 2017.

———. Rule 461. Gasoline Transfer and Dispensing. Website: http://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-403.pdf?sfvrsn=4, accessed May 2017.

National Assessment Synthesis Team (NAST), 2001. Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change, Foundation Report. Website: http://www.climate.org/resources/climate-impacts/unitedstates.html, accessed April 2016.

State of California, Climate Change Portal. October 2013. "Preparing California for Extreme Heat: Guidance and Recommendations."

United Nations Framework Convention on Climate Change (UNFCCC). 2015. Combined Total of Annex I and Non-Annex I Country $CO_2e$ emissions, Greenhouse Gas Inventory Data. Website: http://unfccc.int/ghg_data/ghg_data_unfccc/items/4146.php, accessed May 2017.

United States Department of Energy (DOE). 2003. *Buildings Energy Data Book.*

United States Environmental Protection Agency (EPA). April 2010. *Methane and Nitrous Oxide Emissions from Natural Sources.* Website: http://www2.epa.gov/nscep, accessed April 2016.

———. 2014–2016 Air Quality Data. Website: http://www.epa.gov/airquality/airdata, accessed May 2017.

———. 2015. The 2015 U.S. Greenhouse Gas Inventory Report. Website: http://www3.epa.gov/climatechange/ghgemissions/usinventoryreport.html, accessed May 2016.

———. AirData Monitor Value Reports 2017. Website: https://www3.epa.gov/airdata/ad_rep_mon.html, accessed May 2017.

Western Regional Climate Center. 2017. Website: http://www.wrcc.dri.edu, accessed May 2017.