APPENDIX D

AIR QUALITY AND GHG ANALYSIS

Air Quality/Greenhouse Gas Technical Report
for the
KART Transit Station
Kings County

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Term
ºF	degrees Fahrenheit
µg/m³	micrograms per cubic meter
2016 Ozone Plan	2016 Ozone Plan for the 2008 8-Hour Ozone Standard
2017 PM_{10} Maintenance Plan	2017 PM_{10} Maintenance Plan and Request for Redesignation
2018 $PM_{2.5}$ Plan	2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards
A	areawide
AAQS	ambient air quality standard
AB	Assembly Bill
ACBM	asbestos containing building material
AP	aggregated point
APN	Assessor's Parcel Number
AQP	Air quality plan
ARB	California Air Resources Board
AR4	IPCC's Fourth Assessment Report
BAU	business as usual
BPS	Best Performance Standards
CAAQS	California Ambient Air Quality Standards
CalEEMod™	California Emissions Estimator Model
CAPCOA	California Air Pollution Control Officers Association
ARB	California Air Resources Board
CAC	Certified Asbestos Consultant
CAP	Regional Climate Action Plan
CAT	Climate Action Team
CCAA	California Clean Air Act
CEQA	California Environmental Quality Act
CFC	chlorofluorocarbon
CH_4	methane
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CTI	California Toxic Inventory
DPM	diesel particulate matter
EI	Emission Inventory
ESRL	Earth System Research Laboratory
FCAA	Federal Clean Air Act
ft^2	square feet
GAMAQI	Guide for Assessing and Mitigating Air Quality Impacts
GHG	greenhouse gas
GWP	global warming potential
H_2S	hydrogen sulfide
HFC	hydrofluorocarbon

Acronym/Abbreviation	Term
IPCC	International Panel on Climate Change
IS	Initial Study
ISR	Indirect Source Review
KART	Kings Area Rural Transit
KCAG	Kings County Association of Governments
M	million
MND	Mitigated Negative Declaration
$MtCO_2e$	million tonnes of carbon dioxide equivalents
N	natural
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NO_X	nitrogen oxides
OD	onroad diesel
OG	onroad gasoline
OMD	offroad mobile diesel
OMG	offroad mobile gasoline
OMO	offroad mobile other
PFC	perfluorocarbon
PM	particulate matter
PM_{10}	respirable particulate matter of 10 micrometers or less in size
$PM_{2.5}$	fine particulate matter of 2.5 micrometers or less in size
ppm	parts per million
ROG	reactive organic gases
SB	Senate Bill
SCS	Sustainable Communities Strategy
SF_6	sulfur hexafluoride
SIP	State Implementation Plan
SJV	San Joaquin Valley
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SO_2	sulfur dioxide
SO_4	sulfate
SO_X	sulfur oxides
SP	stationary point
t	abbreviation for tonne (or metric ton)
TAC	toxic air contaminant(s)
tCO_2e	tonne of carbon dioxide equivalent
UNFCCC	United Nations Framework Convention on Climate Change
USEPA	U.S. Environmental Protection Agency
VMT	vehicle miles traveled
VOC(s)	volatile organic compound(s)
WRI	World Resources Institute

1.0 Introduction

1.1 Report Purpose

This Air Quality/Greenhouse Gas Technical Report (Report) was prepared by UltraSystems Environmental Inc. (UltraSystems) to support an Initial Study (IS) and Mitigated Negative Declaration (MND) for the Kings Area Rural Transit (KART) Transit Station Project (Project) in the City of Hanford in Kings County, California.

The purpose of this report is to analyze the potential air quality and climate change/greenhouse gas (GHG) impacts from the construction and operation of a new transit station and associated commercial development that would occur in the downtown area of the city of Hanford.

This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000 *et seq*.). The methodology follows the latest guidance from the San Joaquin Valley Air Pollution Control District (SJVAPCD). To expedite the SJVAPCD's goal of providing technical assistance to lead agencies in addressing air quality issues in environmental documents, the SJVAPCD published the *Guide for Assessing and Mitigating Air Quality Impacts*[1] (GAMAQI) as an advisory document to provide lead agencies, consultants, and project applicants with uniform procedures for addressing air quality in environmental documents.

The methodology also follows guidance from the SJVAPCD for GHGs. To assist lead agencies, project proponents, and interested parties in assessing and reducing the impacts of project specific GHG emissions on global climate change, the SJVAPCD has adopted a *GHG Guidance,*[2] which does not limit a lead agency's authority in establishing its own process and guidance for determining significance of project related impacts on global climate change.

1.2 Project Location

The project is in the city of Hanford, about one half mile east of the existing KART Station. The project site, encompassing 3.6 acres, contains two areas. Area I occupies the entire block surrounded by 8th Street, Brown Street, 7th Street, and Harris Street. Area II occupies a portion of the block north of 8th street. Area I includes nine Assessor's Parcel Numbers (APNs): 0120-4201-4000, 0120-4201-3000, 0120-4201-2000, 0120-4201-1000, 0120-4201-0000, 0120-4200-9000, 0120-4202-5000, 0120-4202-4000 and 0120-4202-7000. Area II includes four APNs: 0102-7501-1000, 0102-7501-0000, 0102-7500-9000 and 0102-7500-8000.

1.3 Project Description

The proposed project includes the construction of the new three-story KART Transit station. It would include the demolition of existing structures and construction of the new transit station and commercial development. The project site is in Hanford's downtown area, and has been previously developed. The project site borders other commercial land uses and is in the Downtown Mixed-Use

1 Guide for Assessing and Mitigating Air Quality Impacts. San Joaquin Valley Air Pollution Control District. Revised March 19, 2015.

2 Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA. San Joaquin Valley Air Pollution Control District. December 17, 2009.

Zoning District (MX-D). The City's General Plan land use designation for the project site is Downtown Mixed Use.

The proposed project would consist of an almost 19,000-square-foot Transit Station Building, offsite parking, and onsite bus parking. The transit building includes 6,900 square feet on the first floor, 5,516 square feet on the second floor and 6,557 square feet on the third floor, totaling 18,973 square feet for the building. The ground floor includes space for KART bus operators, a training room, a large central waiting area with an information kiosk, and additional meeting spaces with movable walls to accommodate events of varying sizes. The open atrium in the center waiting area would extend to the second floor. The third floor would be like the second without the open atrium and would contain office space leasable to tenants.

The proposed project includes 21 sawtooth bus bays, 17 staff parking spaces, eight secure staff parking spaces, and 105 park-and-ride spaces for transit users. Additionally, two electric bus chargers and two electric car chargers would be constructed onsite.

1.4 Construction Activities

Construction is scheduled to begin in July 2021 and finish before July 2022. The first stage of construction will be the demolition activities, with demolition in Area I as the first step. In Area I are five structures to be demolished, totaling approximately 24,076 square feet. Area II's two structures would follow for an additional 4,100 square feet, yielding a project total of 28,176 square feet to be demolished. It is anticipated that there exists the potential for asbestos to be present; therefore, the proponent will coordinate demolition activities with the SJVAPCD for its inspection and potential removal.

The next phases of construction would include site preparation and grading before any structures would be built. At the end of the construction stage will be the laying of pavement and painting buildings. Construction workers would park their vehicles on the project site during construction.

The design-build contract for the project will contain a requirement that Tier 4 equipment be used for demolition and construction equipment wherever commercially available.

2.0 Existing Conditions

Air quality is determined primarily by the type and quantity of contaminants emitted into the atmosphere, the size and topography of the air basin, and its meteorological conditions. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients, along with local topography, provide the link between air pollution emissions and air quality.

2.1 Climatological/Topological Factors

The project site is in the San Joaquin Valley Air Basin (SJVAB) and within the jurisdiction of the SJVAPCD. The San Joaquin Valley (SJV), which is approximately 250 miles long and averages 35 miles wide, is considered a "bowl" open only to the north. Although marine air generally flows into the basin from the north, the region's topographic features restrict air movement through and out of the basin.

These topographic features result in weak airflow, which becomes blocked vertically by high barometric pressure over the SJV. As a result, the SJVAB is highly susceptible to pollutant

accumulation over time. Local climatological effects, including wind speed and direction, temperature, inversion layers, and precipitation and fog, can exacerbate the air quality problem in the SJVAB.

The nearest weather station from the National Weather Stations Cooperative Network to the proposed project is in Hanford, California,[3] approximately one mile to the southwest. The average annual recorded rainfall during the period of record (1899 to 2016) for the Hanford station measured 8.38 inches, with 89 percent occurring between November and April. Normal daily maximum temperatures at this station vary annually by 43 degrees Fahrenheit (°F); where July is the hottest month at 97.8°F and the coldest month being January at 54.7°F. The normal daily minimum temperatures vary by only 28°F annually; where the coldest month is December at 34.6°F and the warmest month is July at 62.5°F.

Solar radiation and temperature are particularly important in the chemistry of ozone formation. Photochemical air pollution (primarily ozone) is produced by the atmospheric reaction of organic substances (such as reactive organic gases [ROG]) and nitrogen dioxide (NO_2) under the influence of sunlight. Ozone concentrations are very dependent on the amount of solar radiation, especially during late spring, summer, and early fall. Ozone levels typically peak in the afternoon. After the sun goes down, the chemical reaction between nitric oxide and ozone begins to dominate. This reaction tends to scavenge the ozone in the metropolitan areas through the early morning hours, resulting in the lowest ozone levels, possibly reaching zero at sunrise in areas with high nitrogen oxides (NO_X) emissions. At sunrise, NO_2 tends to peak, partly due to low levels of ozone at that time and due to the morning commuter vehicle emissions of NO_X.

The vertical dispersion of air pollutants in the SJV can be limited by persistent temperature inversions. Air temperature in the lowest layer of the atmosphere typically decreases with altitude. A reversal of this atmospheric state, where the air temperature increases with height, is termed an inversion. The height of the base of the inversion is known as the "mixing height." This is the level to which pollutants can mix vertically. Mixing of air is minimized above and below the inversion base. The inversion base represents an abrupt density change where little air movement occurs. Inversion layers are significant in determining pollutant concentrations. Concentration levels can be related to the amount of mixing space below the inversion. Temperature inversions that occur on the summer days are usually encountered 2,000 to 2,500 feet above the valley floor. In winter months, overnight inversions occur 500 to 1,500 feet above the valley floor.

2.2 Air Quality Environment

2.2.1 Criteria Air Pollutants

As required by the Federal Clean Air Act (FCAA), the U.S. Environmental Protection Agency (USEPA) has identified criteria pollutants and established National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. NAAQS have been established for ozone, carbon monoxide (CO), NO_2, sulfur dioxide (SO_2), suspended particulate matter (PM), and lead. Suspended PM has standards for both PM with an aerodynamic diameter of 10 micrometers or less (respirable PM, or PM_{10}) and PM with an aerodynamic diameter of 2.5 micrometers or less (fine PM, or $PM_{2.5}$). The California Air Resources Board (ARB) has established separate standards for the state, i.e., the California Ambient Air Quality Standards (CAAQS). The ARB established CAAQS for all the federal pollutants and sulfates,

3 Western U.S. Climate Historical Summaries. Western Regional Climate Center. http://www.wrcc.dri.edu/Climsum.html. Accessed July 2019.

hydrogen sulfide, and visibility-reducing particles. The current list of standards is presented in **Table 2.2-1**.

2.2.1.1 Nitrogen Oxide (NO_x)

NOx is the generic term for a group of highly reactive gases which contain nitrogen and oxygen. While most NOx is colorless and odorless, highly concentrated NO2 can often form a reddish-brown layer over many urban areas. NOx forms when carbon-based fuel is burned at high temperatures, as in a combustion process. A review of the ARB's projected 2020 Emission Inventory (EI) for Kings County shows that approximately 92% of the total NOx emissions in Kings County come from on- and offroad vehicles (37% from onroad and 55% from offroad). The largest portion of onroad NOx emissions come from heavy-duty diesel trucks (73% of the total for onroad). The largest contributors from offroad sources are aircraft (52% of total offroad NOx) and farm equipment (33%).

For some of the pollutants, the identified air quality standards are expressed in more than one averaging time in order to address the typical exposures found in the environment. For example, CO is expressed as a one-hour averaging time and an eight-hour averaging time. Regulations have set NAAQS and CAAQS limits in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). The following text provides descriptions and health effects of each.

2.2.1.2 Ozone

Ozone is not usually emitted directly into the air but is created at ground level by a chemical reaction between nitrogen oxides (NO_X) and volatile organic compounds (VOC), or ROG,[4] in the presence of sunlight. Sources of primary NO_X and ROG emissions are discussed below.

Ground-level ozone is the primary constituent of smog. Sunlight and hot weather cause ground-level ozone to form, with the greatest concentrations usually occurring downwind from urban areas. Ozone is subsequently considered a regional pollutant.

Breathing ozone can trigger a variety of health problems including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma. Ground level ozone also can reduce lung function and inflame the linings of the lungs. Repeated exposure may permanently scar lung tissue. Ground-level ozone can also cause substantial damage to vegetation and other physical materials.

Because NO_X and ROG are ozone precursors, the health effects associated with ozone are also indirect health effects associated with significant levels of NO_X and ROG emissions.

2.2.1.3 Nitrogen Oxides (NO_X)

NO_X is the generic term for a group of highly reactive gases which contain nitrogen and oxygen. While most NO_X is colorless and odorless, highly concentrated NO_2 can often form a reddish-brown layer over many urban areas. A review of the ARB's projected 2020 Emission Inventory (EI) for Kings County[5] shows that approximately 92% of the total NO_X emissions in Kings County come from on- and offroad vehicles (37% from onroad and 55% from offroad). The largest portion of onroad NO_X

4 For the most part, VOC and ROG are synonymous. Both are those portions of organic gases, i.e. hydrocarbons that are reactive enough to be a concern with the formation of ozone.

5 Almanac Emissions Projection Data. California Air Resources Board. http://www.arb.ca.gov/app/emsinv/. Accessed July 2019.

emissions come from heavy-duty diesel trucks (73% of the total for onroad). The largest contributors from offroad sources are aircraft (52% of total offroad NO_X) and farm equipment (33%).

Table 2.2-1
NATIONAL AND STATE AMBIENT AIR QUALITY STANDARDS[6]

Air Pollutant	Averaging Time	California Standard	National Standard
Ozone (O_3)	1-hour 8- hour	0.09 ppm 0.070 ppm	— 0.070 ppm
Respirable particulate matter (PM_{10})	24-hour Annual Arithmetic Mean	50 µg/m³ 20 µg/m³	150 µg/m³ —
Fine particulate matter ($PM_{2.5}$)	24-hour Annual Arithmetic Mean	— 12 µg/m³	35 µg/m³ 12.0 µg/m³
Carbon monoxide (CO)	1-hour 8-hour	20 ppm 9.0 ppm	35 ppm 9 ppm
Nitrogen dioxide (NO_2)	1-hour Annual Arithmetic Mean	0.18 ppm 0.030 ppm	100 ppb 0.053 ppm
Sulfur dioxide (SO_2)	1-hour 24-hour	0.25 ppm 0.04 ppm	75 ppb —
Lead	30-day Average Rolling 3-month Average	1.5 µg/m³ —	— 0.15 µg/m³
Sulfates	24-hour	25 µg/m³	**No National Standard**
Hydrogen sulfide	1-hour	0.03 ppm	
Vinyl chloride*	24-hour	0.01 ppm	
Visibility-reducing particles	8-hour	Extinction coefficient of 0.23 per kilometer, visibility of ten miles or more due to particles when relative humidity is less than 70%.	

Abbreviations:
ppm = parts per million ppb = parts per billion 30-day = 30-day average
µg/m³ = micrograms per cubic meter Mean = Annual Arithmetic Mean

*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.

NO_X reacts with other pollutants to form ground-level ozone, nitrate particles, acid aerosols, and NO_2, all of which cause respiratory problems. NO_X and the pollutants formed from NO_X can be transported

6 Ambient Air Quality Standards. California Air Resources Board. https://ww3.arb.ca.gov/research/aaqs/aaqs2.pdf. Revision 5/14/16. Accessed July 2019.

over long distances, following the patterns of prevailing winds. Therefore, controlling NO_X is often most effective if done from a regional perspective, rather than focusing on the nearest sources.

Current scientific evidence links short-term NO_2 exposures, ranging from 30 minutes to 24 hours, with adverse respiratory effects, including airway inflammation in healthy people and increased respiratory symptoms in people with asthma. Also, studies show a connection between breathing elevated short-term NO_2 concentrations and increased visits to emergency departments and hospital admissions for respiratory issues, especially asthma.[7]

2.2.1.4 Reactive Organic Gases (ROG)

ROG or VOCs are defined as any compound of carbon, excluding CO, carbon dioxide (CO_2), carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions. It should be noted that there are no state or national ambient air quality standards for ROG because they are not classified as criteria pollutants. They are regulated, however, because a reduction in ROG emissions reduces certain chemical reactions that contribute to the formation of ozone. ROG are also transformed in the atmosphere into organic aerosols, which contribute to higher PM_{10} and lower visibility. In addition, some compounds that make up ROG are also toxic, such as the carcinogen benzene, and are often evaluated as part of a toxic risk assessment.

ROG emissions result primarily from incomplete fuel combustion and the evaporation of chemical solvents and fuels. The 2020 Kings County EI shows that the miscellaneous processes category is the largest single contributor to ROG emissions, which represents 48% of the total ROG, with the largest component of this category being farming operations (98%). Another 20% are from other mobile sources and 11% is contributed by solvent evaporation.

2.2.1.5 Carbon monoxide (CO)

CO is a colorless, odorless gas produced by incomplete combustion of carbon-containing fuels (e.g., gasoline, diesel fuel, and biomass). CO levels tend to be highest during the winter months and when meteorological conditions, such as low wind speed, favor the accumulation of pollutants. This occurs when relatively low inversions trap pollutants near the ground and concentrate the CO.

A review of the 2020 Kings County EI shows that the primary source of CO is from other mobile sources, which contribute 74% of the total CO in Kings County, of which 75% are generated by aircraft. On-road motor vehicles (primarily light duty cars and trucks) contribute another 20%. Higher levels of CO generally occur in areas with heavy traffic congestion.

CO is essentially inert to plants and materials but can have significant effects on human health. CO gas enters the body through the lungs, dissolves in the blood, and creates a solid bond to hemoglobin, not allowing it to form a loose bond with O_2. This firm binding therefore reduces available oxygen in the blood and oxygen delivery to the body's organs and tissues.

7 Health Effects of Nitrogen Dioxide. Environmental Protection Agency. http://www.epa.gov/oaqps001/nitrogenoxides/health.html. Accessed September 2013.

2.2.1.6 Particulate matter (PM)

PM is a mixture of microscopic solids and liquid droplets suspended in air. This pollution is made up of several components, including acids (such as nitrates and sulfates), organic chemicals, metals, soil or dust particles, and allergens (such as fragments of pollen or mold spores).

A review of the 2020 Kings County EI shows that 88% of the total PM_{10} emissions in Kings County come from the category labeled Miscellaneous Processes. The largest portion of the PM_{10} emissions from miscellaneous processes category come from farming operations (39% of the total for miscellaneous processes) and fugitive windblown dust (29%).

Whereas a significant portion of PM_{10} emissions come from soil dislocation processes, $PM_{2.5}$ is smaller and is more often a result of particles coming from combustion sources. Subsequently, Miscellaneous Processes only represent 60% of the total $PM_{2.5}$, with the same contributing components as on PM_{10}. However, another 33% of Kings County $PM_{2.5}$ emissions come from other mobile, which is predominantly from aircraft (90%).

The size of particles is directly linked to their potential for causing health problems. Small particles less than 10 micrometers in diameter, or PM_{10}, pose a big problem, because they can get deep into lungs and the bloodstream. Being even smaller, $PM_{2.5}$ will travel further into the lungs. Exposure to such particles can affect both lungs and heart. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including:

- premature death in people with heart or lung disease,
- nonfatal heart attacks,
- irregular heartbeat,
- aggravated asthma,
- decreased lung function, and
- increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing.[8]

2.2.1.7 Sulfur Dioxide (SO_2)

SO_2 is one of a group of highly reactive gases known as sulfur oxides (SO_X). SO_2 is a colorless, irritating gas with a pungent smell formed primarily by the combustion of sulfur-containing fossil fuels. Nationwide the largest sources of SO_2 emissions are from fossil fuel combustion at power plants and other industrial facilities; however, in Kings County, 60% comes from miscellaneous processes, of which farming operations and fugitive windblown dust are the major components (37% and 33% respectively). Another 33% of the Kings County SO_X emissions are contributed by other mobile, which is predominantly from aircraft (90%).

8 Health Effects of Particulate Matter. Environmental Protection Agency. http://www.epa.gov/airquality/particlepollution/health.html. Accessed September 2013.

Current scientific evidence links short-term exposures to SO_2, ranging from 5 minutes to 24 hours, with an array of adverse respiratory affects including bronchoconstriction and increased asthma symptoms. These effects are particularly important for asthmatics at elevated ventilation rates (e.g., while exercising or playing).[9] SO_X can also react with other compounds in the atmosphere to form small sulfate particles. These particles penetrate deeply into sensitive parts of the lungs and can cause or worsen respiratory disease, such as emphysema and bronchitis, and can aggravate existing heart disease, leading to increased hospital admissions and premature death.

2.2.1.8 Lead

Lead is a metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. The health effects of lead poisoning include loss of appetite, weakness, apathy, and miscarriage; it can also cause lesions of the neuromuscular system, circulatory system, brain, and gastrointestinal tract.

Gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels. The use of leaded fuel has been mostly phased out, with the result that ambient concentrations of lead have dropped dramatically. Lead concentrations were last systematically measured in the SJVAB in 1989, when the average concentrations were approximately 5% of the state lead standard. Though monitoring was discontinued in 1990, lead levels are probably well below applicable standards, and the SJVAB is designated in attainment for lead.

2.2.1.9 Hydrogen Sulfide (H_2S)

H_2S is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas and can be emitted as the result of geothermal energy exploitation. H_2S is extremely hazardous in high concentrations; especially in enclosed spaces (800 ppm can cause death). The Occupational Safety and Health Administration regulates workplace exposure to H_2S.

2.2.1.10 Sulfates (SO_4)

Sulfate is one of the fully oxidized ionic forms of sulfur. 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 converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features.

The state SO_4 standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and, because they are usually acidic, can harm ecosystems and damage materials and property.

9 Health Effects of Sulfur Dioxide. Environmental Protection Agency. http://www.epa.gov/airquality/sulfurdioxide/health.html. Accessed September 2013.

2.2.1.11 Visibility-Reducing Particles

Visibility-reducing particles are a mixture of suspended particulate matter consisting 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 standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

2.2.1.12 Vinyl Chloride

Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is formed when other substances such as trichloroethane, trichloroethylene, and tetrachloroethylene are broken down. Vinyl chloride is used to make polyvinyl chloride (PVC), which is used to make a variety of plastic products, including pipes, wire and cable coatings, and packaging materials. Vinyl chloride is a colorless gas with a mild, sweet odor.

Short-term exposure to high levels of vinyl chloride in air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Long-term exposure to vinyl chloride through inhalation and oral exposure causes liver damage. Cancer is a major concern from exposure to vinyl chloride via inhalation. Vinyl chloride exposure has been shown to increase the risk of angiosarcoma, a rare form of liver cancer in humans.

2.2.2 Toxic Air Contaminants

In addition to the above-listed criteria pollutants, toxic air contaminants (TACs) are another group of pollutants of concern. Assembly Bill (AB) 1807[10] sets forth a procedure for the identification and control of TAC in California. It defines a TAC as an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health. Almost 200 compounds have been designated as TACs in California. The ten TACs posing the greatest known health risk in California, based primarily on ambient air quality data, are acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, formaldehyde, methylene chloride, para-dichlorobenzene, perchloroethylene, and diesel particulate matter (DPM). Since no safe levels of TACs can be determined, there are no air quality standards for TACs. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure.

Since 2004, the ARB has maintained the California Toxic Inventory (CTI), which provides emissions estimates by stationary point (SP) and aggregated point (AP); areawide (A), onroad gasoline (OG) and onroad diesel (OD); offroad mobile gasoline (OMG), offroad mobile diesel (OMD), and offroad mobile other (OMO), and natural (N) sources. Stationary sources include point sources provided by facility operators and/or districts pursuant to the Air Toxics "Hot Spots" Program (AB 2588), and aggregated point sources estimated by the ARB and/or districts. Areawide sources are those that do not have specific locations and are spread out over large areas, such as consumer products and unpaved roads. Mobile sources consist of onroad vehicles such as passenger cars and trucks,

10 Enacted in September 1983. Health and Safety Code section 39650 et seq., Food and Agriculture Code Section 14021 et seq.

motorcycles, buses, and heavy-duty trucks. Offroad sources include trains, ships, and boats. Natural sources such as wildfires are also included.

The top three contributors of the potential cancer risk in California (DPM, 1,3 butadiene, and benzene) come primarily from motor vehicles. Cleaner motor vehicles and fuels are reducing the risks from these priority toxic air pollutants. The remaining toxic air pollutants, such as hexavalent chromium and perchloroethylene, while not appearing to contribute as much to the overall risks, can present high risks to people living close to a source. The ARB has air toxic control measures that are either already on the books, in development, or under evaluation for most of the remaining top ten, where actions are suitable through local district motor vehicle, consumer products, or industrial source programs. Of these top ten, carbon tetrachloride is unique in that most of the health risk from this toxic air pollutant is not attributable to specific sources, but rather to background concentrations. Emissions from the top ten TACs in Kings County in 2010 are presented in **Table 2.2-2.**

2.2.3 Sensitive Receptors

Sensitive receptors are those people who are more sensitive than others to air pollutants. The reasons for greater than average sensitivity include health problems, proximity to emissions sources, or duration of exposure to air pollutants. Schools, hospitals, and convalescent homes are relatively sensitive to poor air quality because children, elderly people, and the infirm are more susceptible to respiratory distress and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods of time, with associated greater exposure to ambient air quality. Recreational uses are also considered sensitive because vigorous exercise associated with recreation places a high demand on the human respiratory system.

The project is in downtown Hanford and is adjacent to residential uses. In addition, some schools are within a mile, such as Saint Rose Catholic School (0.6 mile north of the project site) and Woodrow Wilson Junior High School (0.7 mile northwest of the project site).

2.2.4 Asbestos

Asbestos is the name given to several naturally occurring fibrous silicate minerals that have been mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. The three most common types of asbestos are chrysotile, amosite, and crocidolite. Chrysotile, also known as white asbestos, is the most common type of asbestos found in buildings. Chrysotile makes up approximately 90 to 95% of all asbestos contained in buildings in the United States.

The proposed project includes demolition of several existing buildings. Due to the age of some of the buildings to be demolished, there exists the potential for the presence of asbestos.

Table 2.2-2
2010 TAC EMISSIONS[11] IN KINGS COUNTY (TONS PER YEAR)

Toxic Air Contaminant	SP	AP	A	OD	OG	OMG	OMD	OMO	N	Total
Diesel particulate matter (DPM)	0.760	22.906	0.000	119.643			15.622			158.93
1,3-Butadiene	0.020	0.133	1.319	0.420	2.958	0.694	0.415	0.501	0.477	6.94
Benzene	0.767	4.757	0.394	4.426	14.093	3.346	4.371	0.560	1.044	32.76
Acetaldehyde	0.040	5.147	280.179	16.265	2.342	0.820	16.064	1.246	782.884	1,397.33
Hexavalent Chromium	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		0.002
para-Dichlorobenzene	0.005		5.004							5.01
Formaldehyde	5.847	11.948	8.092	32.552	7.926	2.509	32.150	3.593		104.62
Methylene Chloride	2.587	2.729	6.772							12.09
Perchloroethylene	1.255	10.286	5.706							17.25
Carbon Tetrachloride	<0.001									<0.001

11 California Toxics Inventory – Draft 2010 CTI Summary Table. California Air Resources Board. (November 2013. http://www.arb.ca.gov/toxics/cti/cti.htm. Accessed July 2019.

2.3 Baseline Air Quality

California's ambient air monitoring network is one of the most extensive in the world, consisting of over 250 sites where air pollution levels are monitored, and more than 700 monitors used to measure the pollutant levels. The monitoring network needs to be large to cover the diverse range of topography, meteorology, emissions, and air quality in California, while adequately representing a large population. Existing levels of ambient air quality and historical trends and projections in the project area are best documented by measurements made by these monitoring sites. The nearest monitoring station to the proposed project site is located approximately 0.8 mile south at 807 South Irwin Street. The Hanford-South Irwin Street Site monitors for ozone, PM_{10}, $PM_{2.5}$, and NO_2. There has been no CO monitoring activity in the SJV since 2012. Data presented in **Table 2.3-1** summarizes 2016 through 2018 published monitoring data from the ARB's Aerometric Data Analysis and Management System for the Hanford station.

The monitoring data shows the general air quality problems of Kings County in that both federal and state ozone standards were exceeded numerous times each year monitored. While the state PM_{10} standard was exceeded in all three years, the federal PM_{10} standard was exceeded only on days in which ambient concentrations were believed to be increased by wildfires. The federal $PM_{2.5}$ standard was also exceeded numerous times each year but the federal and state CO and NO_2 standards were never exceeded.

Table 2.3-1
AMBIENT AIR QUALITY MONITORING SUMMARY FOR NEAREST MONITORING STATION[12]

Air Pollutant	2016	2017	2018
Ozone – Hanford			
Max 1 Hour (ppm)	0.097	0.106	0.108
Days > CAAQS (0.09 ppm)	2	7	1
Max California 8 Hour (ppm)	0.088	0.094	0.082
Days > NAAQS (0.075 ppm)	49	38	29
Days > CAAQS (0.070 ppm)	53	42	30
Inhalable Particulate Matter (PM_{10}) – Hanford			
Max Daily National Measurement	152.2	299.4[13]	174.2[14]
Days > NAAQS (150 µg/m³)	0	2	1
Days > CAAQS (50 µg/m³)	20	20	19
Fine Particulate Matter ($PM_{2.5}$) – Hanford			
Max Daily National Measurement	59.7	113.4	107.8
Days > NAAQS (35 µg/m³)	25	33	31
Nitrogen Dioxide (NO_2) - Hanford			
2nd Highest Max Hourly (ppb)	48.1	52.3	53.2
Days > NAAQS (100 ppb)	0	0	0
Days > CAAQS (0.18 ppm)	0	0	0

Abbreviations:
> = exceed
ppm = parts per million
ppb = parts per billion
µg/m³ = micrograms per cubic meter
NAAQS = National Ambient Air Quality Standard
Mean = Annual Arithmetic Mean
Bold = exceedance
N/A = not available
CAAQS = California Ambient Air Quality Standard

2.4 Greenhouse Gases

Constituent gases that trap heat in the Earth's atmosphere are called GHGs, analogous to the way a greenhouse retains heat. GHGs play a critical role in the Earth's radiation budget by trapping infrared radiation emitted from the Earth's surface, which would otherwise have escaped into space. Prominent GHGs contributing to this process include CO_2, methane (CH_4), nitrous oxide (N_2O), and chlorofluorocarbons (CFCs). Without the natural heat-trapping effect of GHG, the earth's surface would be about 34°F cooler.[15] This is a natural phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate. However, anthropogenic emissions of these GHGs in excess of natural ambient concentrations are responsible for the enhancement of the "greenhouse

12 ADAM Air Quality Data Statistics. California Air Resources Board. http://www.arb.ca.gov/adam/welcome.html. Accessed August 2019.
13 Probably exacerbated by numerous wildfires burning upwind from the Hanford Monitoring Station on the day of highest PM_{10} (September 3, 2017) including the Salmon August Complex, Eclipse Complex, and Orleans Complex in Siskiyou County; South Fork Fire in Mariposa County; Railroad and Mission Fires in Madera County; and the Ponderosa Fire in Butte County. The second highest reading was 158.0.
14 Probably exacerbated by numerous wildfires burning upwind from the Hanford Monitoring Station on the day of highest PM_{10} (November 16, 2018) including the Camp Fire, in Butte County, which was the most destructive fire in California history and started November 8, 2018. The second highest reading was 131.3.
15 Climate Action Team Report to Governor Schwarzenegger and the California Legislature. California Environmental Protection Agency, Climate Action Team. March 2006.

effect" and have led to a trend of unnatural warming of the Earth's climate, which is known as global warming or climate change, or more accurately global climate disruption. Emissions of these gases that induce global climate disruption are attributable to human activities associated with industrial/manufacturing, utilities, transportation, residential, and agricultural sectors.

The Global Warming Potential (GWP) is the potential of a gas or aerosol to trap heat in the atmosphere. Individual GHG compounds have varying GWP and atmospheric lifetimes. The reference gas for the GWP is CO_2; CO_2 has a GWP of one. The calculation of the CO_2 equivalent (CO_2e) is a consistent methodology for comparing GHG emissions since it normalizes various GHG emissions to a consistent metric. CH_4's warming potential of 25 indicates that CH_4 has a 25 times greater warming affect than CO_2 on a molecular basis and the GWP for sulfur hexafluoride is 22,800. The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that time period. The time period usually used for GWPs is 100 years. GWPs for the three primary GHGs produced by the project are presented in **Table 2.4-1.** A CO_2e is the mass emissions of an individual GHG multiplied by its GWP. GHGs are often presented in units called tonnes (t) (i.e., metric tons) of CO_2e (tCO_2e).

Table 2.4-1
GLOBAL WARMING POTENTIALS[16]

Pollutant	GWP for 100-year time horizon	
	Second assessment report[17]	4th assessment report (AR4) [18]
Carbon dioxide (CO_2)	1	1
Methane (CH_4)	21	25
Nitrous oxide (N_2O)	310	298

Note: Current protocol is to use the 4th assessment values; however, the second assessment report values are also provided since they are the values used by many inventories and public documents.

2.4.1 Carbon Dioxide (CO_2)

Carbon Dioxide is a colorless, odorless gas consisting of molecules made up of two oxygen atoms and one carbon atom. CO_2 is produced when an organic carbon compound (such as wood) or fossilized organic matter (such as coal, oil, or natural gas) is burned in the presence of oxygen. CO_2 is removed from the atmosphere by CO_2 "sinks," such as absorption by seawater and photosynthesis by ocean-dwelling plankton and land plants, including forests and grasslands. However, seawater is also a source of CO_2 to the atmosphere, along with land plants, animals, and soils, when CO_2 is released during respiration. Whereas the natural production and absorption of CO_2 is achieved through the terrestrial biosphere and the ocean, humankind has altered the natural carbon cycle by burning fossil coal, oil, and natural gas; and wood. Since the industrial revolution began in the mid-1700s, each of

16 *Global Warming Potentials*. *Greenhouse Gas Protocol*. World Resources Institute and World Business Council on Sustainable Development. http://www.ghgprotocol.org/files/ghgp/tools/Global-Warming-Potential-Values.pdf. Accessed May 2015.
17 Second Assessment Report. Climate Change 1995: WG I - The Science of Climate Change. Intergovernmental Panel on Climate Change. 1996
18 *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. 2007

these activities has increased in scale and distribution. Prior to the industrial revolution, CO_2 concentrations were stable at a range of 275 to 285 parts per million[19] (ppm). The National Oceanic and Atmospheric Administration's (NOAA's) Earth System Research Laboratory (ESRL)[20] indicates that global concentration of CO_2 were 396.72 ppm in April 2013. In addition, the CO_2 levels at Mauna Loa[21] averaged over 400 ppm for the first time during the week of May 26, 2013. These concentrations of CO_2 exceed by far the natural range over the last 650,000 years (180 to 300 ppm), as determined from ice cores.

2.4.2 Methane (CH_4)

Methane (CH_4) is a colorless, odorless non-toxic gas consisting of molecules made up of four hydrogen atoms and one carbon atom. CH_4 is combustible, and it is the main constituent of natural gas, a fossil fuel. CH_4 is released when organic matter decomposes in low oxygen environments. Natural sources include wetlands, swamps and marshes, termites, and oceans. Human sources include the mining of fossil fuels and transportation of natural gas, digestive processes in ruminant animals such as cattle, rice paddies and the buried waste in landfills. Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of CH_4. Other anthropogenic sources include fossil-fuel combustion and biomass burning.

2.4.3 Nitrous Oxide (N_2O)

Nitrous Oxide (N_2O) is a colorless, non-flammable gas with a sweetish odor, commonly known as "laughing gas," and sometimes used as an anesthetic. N_2O is naturally produced in the oceans and in rainforests. Manmade sources of N_2O include the use of fertilizers in agriculture, nylon and nitric acid production, cars with catalytic converters and the burning of organic matter. Concentrations of N_2O also began to rise at the beginning of the industrial revolution.

2.4.4 Chlorofluorocarbons (CFCs)

Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in CH_4 or ethane with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the Earth's surface). They have no natural sources but were first synthesized in 1928. CFCs have been used as refrigerants, aerosol propellants, and cleaning solvents. Because of the discovery that they can destroy stratospheric ozone, an ongoing global effort to halt their production was undertaken and has been extremely successful, so much so that levels of the major CFCs are now remaining steady or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.

19 Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007. Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

20 Trends in Atmospheric Carbon Dioxide. Earth System Research Laboratory. National Oceanic and Atmospheric Administration. http://www.esrl.noaa.gov/gmd/ccgg/trends/global.html. Accessed June 2013.

21 Ibid.

2.4.5 Hydrofluorocarbons (HFCs)

Hydrofluorocarbons (HFCs) are synthesized chemicals that are used as a substitute for CFCs. Out of all the GHGs, HFCs are one of three groups with the highest GWP. HFCs are synthesized for applications such as automobile air conditioners and refrigerants.

2.4.6 Perfluorocarbons (PFCs)

Perfluorocarbons (PFCs) have stable molecular structures and do not break down through chemical processes in the lower atmosphere. High-energy ultraviolet rays about 60 kilometers above Earth's surface are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. The two main sources of PFCs are primary aluminum production and semiconductor manufacture.

2.4.7 Sulfur Hexafluoride (SF_6)

Sulfur Hexafluoride (SF_6) is an extremely potent greenhouse gas. SF_6 is very persistent, with an atmospheric lifetime of more than a thousand years. Thus, a relatively small amount of SF_6 can have a significant long-term impact on global climate change. SF_6 is human-made, and the primary user of SF_6 is the electric power industry. Because of its inertness and dielectric properties, it is the industry's preferred gas for electrical insulation, current interruption, and arc quenching (to prevent fires) in the transmission and distribution of electricity. SF_6 is used extensively in high voltage circuit breakers and switchgear, and in the magnesium metal casting industry.

2.4.8 GHG Emission Levels

Per the World Resources Institute[22] (WRI) in 2014, total worldwide GHG emissions were estimated to be 44,204 million tonnes of CO_2e ($MtCO_2e$) and GHG emissions per capita worldwide was 6.13 tCO_2e. These emissions exclude GHG emissions associated with the land use, land-use change, and forestry sector, and bunker fuels. The WRI reports that in 2014, total GHG emissions in the U.S. were 6,371 $MtCO_2e$, with average GHG emissions per capita of 20.00 tCO_2e and total GHG emissions in California were 454.5 $MtCO_2e$ in 2014, with average GHG emissions per capita of 11.75 tCO_2e.

California has a larger percentage of its total GHG emissions coming from the transportation sector (56%) than the U.S. emissions (31%) and a smaller percentage of its total GHG emissions from the electricity generation sector, i.e. California has 13%, but the U.S. has 43%.

2.4.9 Potential Environmental Effects

Worldwide, average temperatures are likely to increase by 3°F to 7°F by the end of the 21st century.[23] However, a global temperature increase does not directly translate to a uniform increase in temperature in all locations on the earth. Regional climate changes are dependent on multiple variables, such as topography. One region of the Earth may experience increased temperature, increased incidents of drought, and similar warming effects, whereas another region may experience a relative cooling. According to the International Panel on Climate Change's (IPCC) Working Group II

22 CAIT Climate Data Explorer. Historical Emissions. World Resources Institute. http:// http://cait2.wri.org/historical/. Accessed August 2019.

23 *Climate Change 2007: Impacts, Adaptation, and Vulnerability*. Intergovernmental Panel on Climate Change. Website http://www.ipcc.ch/ipccreports/ar4-wg2.htm

Report,[24] climate change impacts to North America may include diminishing snowpack, increasing evaporation, exacerbated shoreline erosion, exacerbated inundation from sea level rising, increased risk and frequency of wildfire, increased risk of insect outbreaks, increased experiences of heat waves, and rearrangement of ecosystems, as species and ecosystem zones shift northward and to higher elevations.

2.4.10 California Implications

Even though climate change is a global problem and GHGs are global pollutants, the specific potential effects of climate change on California have been studied. The third assessment produced by the California Natural Resources Agency (CNRA)[25] explores local and statewide vulnerabilities to climate change, highlighting opportunities for taking concrete actions to reduce climate-change impacts. Projected changes for the remainder of this century in California include:

- **Temperatures** – By 2050, California is projected to warm by approximately 2.7°F above 2000 averages, a threefold increase in the rate of warming over the last century and springtime warming — a critical influence on snowmelt — will be particularly pronounced.

- **Rainfall** – Even though model projections continue to show the Mediterranean pattern of wet winters and dry summers with seasonal, year-to-year, and decade-to-decade variability, improved climate models shift towards drier conditions by the mid-to-late 21st century in Central, and most notably, Southern California.

- **Wildfire** - Earlier snowmelt, higher temperatures, and longer dry periods over a longer fire season will directly increase wildfire risk. Indirectly, wildfire risk will also be influenced by potential climate-related changes in vegetation and ignition potential from lightning, with human activities continuing to be the biggest factor in ignition risk. Models are showing that estimated that property damage from wildfire risk could be as much as 35% lower if smart growth policies were adopted and followed than if there is no change in growth policies and patterns.

The third assessment by CNRA not only defines projected vulnerabilities to climatic changes but analyzes potential impacts from adaptation measures used to minimize harm and take advantage of beneficial opportunities that may arise from climate change.

The report highlights important new insights and data, using probabilistic and detailed climate projections and refined topographic, demographic, and land use information. The findings include:

- The state's electricity system is more vulnerable than was previously understood.

- The Sacramento-San Joaquin Delta is sinking, putting levees at growing risk.

- Wind and waves, in addition to faster rising seas, will worsen coastal flooding.

24 Ibid.

25 Our Changing Climate 2012: Vulnerability & Adaptation to the Increasing Risks from Climate Change in California. California Natural Resources Agency. July 2012 / CEC-500-2012-007.

- Animals and plants need connected "migration corridors" to allow them to move to habitats that are more suitable to avoid serious impacts.
- Native freshwater fish are particularly threatened by climate change.
- Minority and low-income communities face the greatest risks from climate change.

The Fourth Assessment[26] by the CNRA goes further by including a set of state-funded research reports that examine how climate change will affect specific sectors, potential responses to climate change, and other policy-driven questions, including reports for nine regions of the state.

3.0 Regulatory Context

In California, air quality management responsibilities exist at local, state, and federal levels of government. In general, air quality management planning programs developed during the past few decades have been in response to requirements established by the FCAA. However, the enactment of the California Clean Air Act (CCAA) and its subsequent revisions has produced changes in the structure and administration of air quality management programs in California.

3.1 Regulatory Agencies

3.1.1 U. S. Environmental Protection Agency (USEPA)

The USEPA is the federal agency responsible for overseeing state air programs as they relate to the FCAA, approving the State Implementation Plans (SIP), establishing NAAQS and setting emission standards for mobile sources under federal jurisdiction. EPA has delegated the authority to implement many of the federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented.

3.1.2 California Air Resources Board (ARB)

The ARB is the state agency responsible for establishing CAAQS, adopting and enforcing emission standards for various sources including mobile sources (except where federal law preempts their authority), fuels, consumer products, and toxic air contaminants. The ARB is also responsible for providing technical support to California's 35 local air districts, which are organized at the county or regional level, overseeing local air district compliance with State and federal law, approving local air plans and submitting the SIP to EPA. ARB also regulates mobile emission sources in California, such as construction equipment, trucks, and automobiles.

For the purposes of managing air quality in California, the California Health & Safety Code gave the ARB the responsibility to divide the state into air basins "based upon similar meteorological and geographic conditions and consideration for political boundary lines whenever practicable." The proposed project is in Kings County.

26 *California's Fourth Climate Assessment*. Governor's Office of Planning and Research, California Natural Resources Agency, California Energy Commission. http://www.climateassessment.ca.gov/. Accessed February 27, 2019.

3.1.3 San Joaquin Valley Air Pollution Control District (SJVAPCD)

The air pollution control agency for the SJVAB is the SJVAPCD. The SJVAPCD maintains air quality monitoring stations, develops plans, and implements control measures in the SJVAB. These controls primarily affect stationary sources such as factories and plants. The SJVAPCD also conducts public education and outreach efforts such as the Valley Air District's Healthy Air Living, Wood Burning, and Smoking Vehicle voluntary programs.

3.2 Attainment Status for Criteria Pollutants

3.2.1 Federal

The USEPA has identified nonattainment and attainment areas for each criteria air pollutant. Under amendments to the FCAA, it has classified air basins or portions thereof as "attainment," "nonattainment," or "unclassifiable," based on whether the national standards have been achieved. The USEPA uses two categories to designate areas with respect to $PM_{2.5}$ and NO_2: (1) does not meet the standard (nonattainment) and (2) cannot be classified or better than national standards (unclassifiable/attainment). It uses four categories to designate for SO_2 but the only two that are applicable in California are nonattainment or unclassifiable. The USEPA uses three categories to designate for PM_{10}: attainment, nonattainment, and unclassifiable.

The FCAA uses the classification system to design cleanup requirements appropriate for the severity of the pollution and set realistic deadlines for reaching cleanup goals. If an air basin is not in federal attainment (that is, it does not meet federal standards) for a particular pollutant, the basin is classified as a marginal, moderate, serious, severe, or extreme nonattainment area, based on the estimated time it would take to reach attainment. Nonattainment areas must take steps towards attainment by a specific timeline. **Table 3.2-1** shows the federal attainment designations and classifications[27] for the proposed project area.

Table 3.2-1
DESIGNATIONS/CLASSIFICATIONS FOR THE PROJECT AREA

Pollutant	State Designation (Classification)	Federal Designation (Classification)
Ozone	Nonattainment (Severe)	Nonattainment (Extreme)
Suspended Particulate Matter (PM_{10})	Nonattainment	Attainment
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment	Nonattainment
Carbon Monoxide (CO)	Attainment	Unclassifiable/Attainment
Nitrogen Dioxide (NO_2)	Attainment	Unclassifiable/Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Lead	Attainment	Unclassifiable/Attainment
Sulfates	Attainment	**No federal standards**
Hydrogen Sulfide (H_2S)	Unclassified	
Visibility-Reducing Particles	Unclassified	

27 The Green Book Nonattainment Areas for Criteria Pollutants. Environmental Protection Agency. http://www.epa.gov/airquality/greenbk/. Accessed October 2013.

3.2.2 State

The state area designations,[28] adopted by the ARB December 28, 2012, became effective April 1, 2013. The area designations are made on a pollutant-by-pollutant basis, for all pollutants listed above. The state designation criteria specify four categories: nonattainment, nonattainment-transitional, attainment, and unclassified. A nonattainment designation indicates that one or more violations of the state standard have occurred. A nonattainment-transitional designation is a subcategory of nonattainment that indicates improving air quality, with only occasional violations or exceedances of the state standard. In contrast, an attainment designation indicates no violations of the state standard are available to evaluate attainment status. Finally, an unclassified designation indicates either no air quality data or an incomplete set of air quality data. State attainment designations in the affected area are listed in **Table 3.2-1.**

3.3 Regulatory Environment

3.3.1 State Strategies

3.3.1.1 Mobile Source Strategy (State Strategy)

As part of the 2016 State Implementation Plan (SIP), the State included a comprehensive strategy to reduce emissions from mobile sources to meet critical air quality and climate goals over the next 15 years.[29] The state strategy is proposed to achieve multiple goals, such as an 80% reduction in smog forming emissions, a 45% reduction in GHG emissions, a 50% reduction in petroleum usage, and a 45% reduction in DPM emissions statewide. Actions to deploy both zero-emission and cleaner combustion technologies will be essential to meet these multiple goals.

Near-term focused electrification and progress towards zero-emission technologies is critical to continue to reduce near-source exposure to air toxics, especially around freight hubs such as ports, rail yards, and distribution centers.

For passenger vehicles, the strategy calls for increasing the penetration of plug-in hybrid electric vehicles and non-combustion zero-emission vehicles including battery-electric and hydrogen fuel cell electric vehicles by over 50 percent compared to current programs and the electrical grid and hydrogen supply supporting these electric vehicles will need to represent 50 percent renewable energy generation. A large portion of the liquid fuels for combustion engine vehicles will also need to be sourced from renewable feedstock. For heavy-duty vehicles, the ARB is laying the groundwork for reducing emissions on multiple fronts: cleaner internal combustion engines, renewable fuels, and zero-emission technology. Along with the widespread use of cleaner technologies and fuels, the strategy calls for ongoing improvements in community design and efficiency improvements to the freight transport system. These efforts will make our communities and cities more sustainable and enhance the benefits of investments in cleaner technologies by reducing growth in vehicle miles traveled (VMT).

28 2012 Area Designations: Attachment C: Maps and Tables of Area Designations for State and National Ambient Air Quality Standards. California Air Resources Board. Executive Order R-12-013. December 28, 2012.

29 Revised Proposed 2016 State Strategy for the State Implementation Plan. California Air Resources Board. March 7, 2017.

3.3.2 Local Regulations and Plans

3.3.2.1 SJVAPCD Rules and Regulations

All projects are subject to SJVAPCD rules and regulations in effect at the time of construction. Specific rules applicable to the construction of the proposed project may include, but are not limited to, the following:

- **Rule 4002 (National Emission Standards for Hazardous Air Pollutants)** requires that, if any portion of an existing building will be renovated, partially demolished or removed, the project will be subject to SJVAPCD Rule 4002. Prior to any demolition activity, an asbestos survey of existing structures on the project site may be required to identify the presence of any asbestos containing building material (ACBM). Any identified ACBM having the potential for disturbance must be removed by a certified asbestos contractor in accordance with CAL-OSHA requirements.
- **Rule 4102 (Nuisance)** applies to any source operation that emits or may emit air contaminants or other materials. If the project or construction of the project creates a public nuisance, it could be in violation and be subject to SJVAPCD enforcement action.
- **Rule 4601 (Architectural Coatings)** limits volatile organic compounds from architectural coatings. This rule specifies architectural coatings storage, clean up and labeling requirements and is applicable to any person who supplies, sells, offers for sale, applies, or solicits the application of any architectural coating or who manufactures, blends or repackages any architectural coating for use within the District. Aerosol coating products, architectural coatings from outside of the District, and most architectural coating containers with a volume of one liter or less are exempt. VOC contents, restrictions, directions for thinning, and a table of standards are all supplied in the requirements section of the rule (5.0).
- **Regulation VIII (Fugitive PM_{10} Prohibitions)** reduces ambient concentrations of PM_{10} by requiring actions to prevent, reduce or mitigate anthropogenic fugitive dust emissions.
- **Rule 8021** limits fugitive dust emissions from construction, demolition, excavation, extraction, and other earthmoving activities and applies to any construction, demolition, excavation, extraction, and other earthmoving activities, including, but not limited to, land clearing, grubbing, scraping, travel on site, and travel on access roads to and from the site.
- **Rule 8031** limits fugitive dust emissions from the outdoor handling, storage, and transport of bulk materials and applies to the outdoor handling, storage, and transport of any bulk material.
- **Rule 8041** prevents or limits fugitive dust emissions from carryout and trackout and applies to all sites that are subject to any of the following rules where carryout or trackout has occurred or may occur on paved public roads or the paved shoulders of a paved public road.
- **Rule 8051** limits fugitive dust emissions from open areas and applies to any open area having 0.5 acre or more within urban areas, or 3.0 acres or more within rural areas; and contains at least 1,000 square feet of disturbed surface area.
- **Rule 8061** limits fugitive dust emissions from paved and unpaved roads by implementing control measures and design criteria.
- **Rule 8071** limits fugitive dust emissions from unpaved vehicle and equipment traffic areas and applies to any unpaved vehicle/equipment traffic area.

3.3.2.2 Rule 9510 (Indirect Source Review)

The Indirect Source Review (ISR) rule, which went into effect March 1, 2006, requires developers of larger residential, commercial, and industrial projects to reduce smog-forming and particulate emissions generated by their projects. The ISR rule seeks to reduce the growth in NO_X and PM_{10} emissions associated with construction and operation of new development projects in the SJV.

The ISR rule requires developers to reduce construction NO_X and PM_{10} exhaust emissions by 20% and 45%, respectively, and reduce operational NO_X and PM_{10} emissions by 33.3% and 50%, respectively, as compared to the unmitigated baseline. Although transportation and transit station development are exempt from operational ISR requirements, Section 2.4 of the ISR Rule states:

> "Effective on and after March 1, 2006, this rule shall apply to any transportation or transit development project where construction exhaust emissions equal or exceed two (2.0) tons of NO_X or two (2.0) tons of PM_{10}."

3.3.2.3 Asbestos Program

The purpose of the SJVAPCD's Asbestos Program[30] is to protect the public from uncontrolled emissions of asbestos through enforcement of the federal National Emission Standard for Hazardous Air Pollutants for asbestos.[31] The Program covers most renovations and demolition projects in the San Joaquin Valley Air Basin. Elements of the program include survey and notification requirements prior to beginning a project, as well as work practice standards and disposal requirements.

If asbestos is expected, a Certified Asbestos Consultant (CAC) will need to perform an asbestos survey prior to the demolition of a regulated facility. Following the completion of an asbestos survey, the proponent would submit the asbestos survey, Asbestos Notification, Demolition Permit Release, and the proper fees to the SJVAPCD ten working days prior to the removal of regulated asbestos containing material and the demolition when no asbestos is present.

In addition to the total destruction of a structure, demolitions include "the removal of any load-supporting structural member from a facility together with any related handling operations or the intentional burning of a building" (training burns conducted by a fire fighting agency). Also, the separation of a structure from its foundation prior to relocation is a demolition.

3.3.2.4 SJVAPCD Air Quality Plans

There are currently three different air quality plans (AQPs) for the attainment and maintenance of air quality in the SJVAB. These include the 2016 Ozone Plan,[32] the 2018 $PM_{2.5}$ Plan,[33] and the 2007

30 Asbestos Requirements for Demolitions and Renovations. San Joaquin Valley Air Pollution Control District. http://www.valleyair.org/busind/comply/asbestos-0514.htm. Accessed August 2019.

31 40 CFR Part 61 – National Emission Standards for Hazardous Air Pollutants, Subpart M—National Emission Standard for Asbestos. Available online at https://www.ecfr.gov/cgi-bin/text-idx?SID=d1cb7551b7d66a7b8955d3fa83ae2c14&mc=true&node=sp40.9.61.m&rgn=div6. Accessed on August 27, 2019.

32 2016 Ozone Plan for the 2008 8-Hour Ozone Standard. San Joaquin Valley Air Pollution Control District. Adopted June 16, 2016.

33 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards. San Joaquin Valley Air Pollution Control District. Adopted November 15, 2018.

PM_{10} Maintenance Plan.[34] Plans that receive final approval from the USEPA have special status under the FCAA; however, once SJVAPCD approves a plan, implementation must proceed immediately to achieve milestones contained in the plans or the air basin will face sanctions. For this document, only air quality plans that have been adopted by SJVAPCD and approved by EPA will be considered an "existing" or "current" plan.

3.3.2.5 2016 Ozone Plan

The deadline for the SJV to attain the 2008 8-hour ozone standard is December 31, 2031, which will require an additional 207.7 tons per day in NO_X reductions from stationary and mobile sources throughout the SJV. The 2016 Ozone Plan builds upon the SJVAPCD's 1-hour ozone, 8-hour ozone, and particulate matter strategies. The attainment strategy for attaining the 2008 8-hour ozone standard includes control measures that have already been adopted, area source regulations shared with the ARB, and new control measures that require technological feasibility and cost-effectiveness. The 2016 Ozone Plan includes two stationary source control measure commitments that meet the Reasonable Available Control Technology requirements, including a new rule governing flares and a rule governing wine fermentation and storage tanks.

3.3.2.6 2018 $PM_{2.5}$ Plan

The 2018 $PM_{2.5}$ Plan integrates a comprehensive strategy that contains new stationary source measures that will be applied Valley-wide and measures focused on reducing emissions in areas with the most difficult attainment challenges. Under the FCAA, the entire SJV is designated as not meeting the standard if any area in the SJV is not able to meet the standard. This Plan not only includes a comprehensive suite of regulatory and incentive-based measures for both stationary and mobile sources to be implemented Valley wide, but also includes a targeted hot-spot strategy that focuses new residential wood burning and commercial underfired charbroiling emission reduction measures in Fresno, Madera, and Kern counties.

3.3.2.7 2007 PM_{10} Maintenance Plan

SJVAPCD has adopted and submitted a series of PM_{10} plans to the USEPA for review and approval. In June 2003, SJVAPCD adopted its strategy for attaining the PM_{10} standard. In February 2006 the SJVAPCD adopted another PM_{10} Plan which affirmed that the 2003 Plan's strategy was proving to be successful and was on track to meet the federal standard by the 2010 deadline.

SJVAPCD adopted the 2007 PM_{10} Maintenance Plan and requested redesignation as attainment for the federal PM_{10} standard (2007 PM_{10} Plan) on September 20, 2007. The 2007 PM_{10} Maintenance Plan contains modeling demonstrations that show that the SJVAB will not exceed the federal PM_{10} standard for 10 years after the expected USEPA redesignation, monitoring, and verification measures and contingency plan. The USEPA finalized the determination that the SJV has attained the PM_{10} standards on October 17, 2007, effective October 30, 2007. Thus, the SJVAB is now in attainment for PM_{10}.

34 2007 PM_{10} Maintenance Plan and Request for Redesignation. San Joaquin Valley Air Pollution Control District. Adopted September 20, 2007.

3.4 Climate Change Regulatory Environment

3.4.1 Federal Climate Change Legislation

The federal government is taking several common-sense steps to address the challenge of climate change. The USEPA collects several types of GHG emissions data. This data help policy makers, businesses, and USEPA track GHG emissions trends and identify opportunities for reducing emissions and increasing efficiency. The USEPA has been collecting a national inventory of GHG emissions since 1990 and in 2009 established mandatory reporting of GHG emissions from large GHG emissions sources.

The USEPA is also getting GHG reductions through partnerships and initiatives; evaluating policy options, costs, and benefits; advancing the science; partnering internationally and with states, localities, and tribes; and helping communities adapt. Below are a list of laws and programs that have been implemented by the federal government.

3.4.1.1 Energy Independence and Security Act

The Energy Independence and Security Act of 2007 includes several provisions that will increase energy efficiency and the availability of renewable energy, which in turn will reduce GHG emissions. First, the Act sets a Renewable Fuel Standard that requires fuel producers to use at least 36 billion gallons of biofuel by 2022. Second, it increased Corporate Average Fuel Economy Standards to require a minimum average fuel economy of 35 miles per gallon for the combined fleet of cars and light trucks by 2020. Third, it includes a variety of new standards for lighting and for residential and commercial appliance equipment, including residential refrigerators, freezers, refrigerator-freezers, metal halide lamps, and commercial walk-in coolers and freezers.

3.4.1.2 Climate Action Plan

In June 2013, President Obama unveiled his Climate Action Plan. The plan was a national blueprint to slow the effects of climate change and focuses on both CO_2 and short-lived climate pollutants, such as CH_4 and HFCs. Although components of the plan are still active, the current administration is "committed to eliminating harmful and unnecessary policies such as the Climate Action Plan."[35]

3.4.2 State Climate Change Legislation

3.4.2.1 Executive Order S 3-05

On June 1, 2005, the Governor issued Executive Order S 3-05, which set the following GHG emission reduction targets:

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

35 *An America First Energy Plan*. *White House Issues*. White House. Accessed March 26, 2017. URL: https://www.whitehouse.gov/america-first-energy.

To meet these targets, the Climate Action Team prepared a report to the Governor in 2006 that contains recommendations and strategies to help ensure that the targets in Executive Order S-3-05 are met.

3.4.2.2 Assembly Bill 32 (AB 32)

In 2006, the California State Legislature enacted the California Global Warming Solutions Act of 2006, also known as AB 32. AB 32 focuses on reducing GHG emissions in California. GHGs, as defined under AB 32, include CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6. AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. The ARB is the state agency charged with monitoring and regulating sources of emissions of GHGs that cause global warming in order to reduce emissions of GHGs. AB 32 also requires that by January 1, 2008, the ARB must determine what the statewide GHG emissions level was in 1990, and it must approve a statewide GHG emissions limit so it may be applied to the 2020 benchmark. The ARB approved a 1990 GHG emissions level of 427 $MtCO_2e$, on December 6, 2007 in its Staff Report. Therefore, in 2020, emissions in California are required to be at or below 427 $MtCO_2e$.

Under the "business as usual or (BAU)" scenario established in 2008, statewide emissions were increasing at a rate of approximately 1 percent per year as noted below. It was estimated that the 2020 estimated BAU of 596 $MtCO_2e$ would have required a 28 percent reduction to reach the 1990 level of 427 $MtCO_2e$.

3.4.2.3 Climate Change Scoping Plan

The Scoping Plan[36] released by the ARB in 2008 outlined the state's strategy to achieve the AB 32 goals. This Scoping Plan, developed by the ARB in coordination with the Climate Action Team (CAT), proposed a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health. It was adopted by the ARB at its meeting in December 2008. According to the Scoping Plan, the 2020 target of 427 $MtCO_2e$ requires the reduction of 169 $MtCO_2e$, or approximately 28.3 percent, from the State's projected 2020 BAU emissions level of 596 $MtCO_2e$.

However, in May 2014, the ARB developed; in collaboration with the CAT, the First Update to California's Climate Change Scoping Plan[37] (Update), which shows that California is on track to meet the near-term 2020 greenhouse gas limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32. In accordance with the United Nations Framework Convention on Climate Change (UNFCCC), the ARB is beginning to transition to the use of the IIPCC's Fourth Assessment Report (AR4) 100-year GWPs in its climate change programs. The ARB has recalculated the 1990 GHG emissions level with the AR4 GWPs to be 431 $MtCO_2e$, therefore the 2020 GHG emissions limit established in response to AB 32 is now slightly higher than the 427 $MtCO_2e$ in the initial Scoping Plan.

36 Climate Change Scoping Plan: a framework for change. California Air Resources Board. December 2008.

37 First Update to the Climate Change Scoping Plan, Building on the Framework. California Air Resources Board. May 2014.

The 2017 Update to the Scoping Plan[38] builds upon the former Scoping Plans and Updates by outlining priorities and recommendations for the State to achieve its long-term climate objectives. The 2017 Update establishes a proposed framework of action for California to meet the climate target of a 40 percent reduction in GHGs by 2030, compared to 1990 levels. The major elements of the framework proposed are enhancement of the Renewables Portfolio Standard and the Low Carbon Fuel Standard; a Mobile Source Strategy, Sustainable Freight Action Plan, Short-Lived Climate Pollutant Reduction Strategy, Sustainable Communities Strategies, and a Post-2020 Cap-and-Trade Program; a 20 percent reduction in GHG emissions from the refinery sector and an Integrated Natural and Working Lands Action Plan.

3.4.2.4 Senate Bill 375 (SB 375)

Senate Bill (SB) 375 passed the Senate on August 30, 2008 and was signed by the governor on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions and contributes over 40% of the GHG emissions in California, with automobiles and light trucks alone contributing almost 30%. SB 375 indicates that GHGs from automobiles and light trucks can be reduced by new vehicle technology. However, significant reductions from changed land use patterns and improved transportation also are necessary. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

3.4.2.5 Executive Order B-30-15

On April 29, 2015, the Governor issued EO B-30-15, which added an interim target of GHG emissions reductions to help ensure that the state meets its 80% reduction by 2050, as set in EO S-3-05. The interim target is reducing GHG emissions by 40% by 2030. It also directs state agencies to update the Scoping Plan, update an Adaptation Strategy every three years, and take climate change into account in their planning and investment strategies. Additionally, it requires the State's Five-Year Infrastructure Plan to take current and future climate change impacts into account in all infrastructure projects.

3.4.2.6 Title 24

Although not originally intended to reduce GHGs, California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. The 2008 standards became effective January 1, 2010. The requirement for when the 2008 standards must be followed depends on when the application for the building permit is submitted. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The 2016 standards became effective July 1, 2017.

38 The 2017 Climate Change Scoping Plan Update: The Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target. California Air Resources Board. January 20, 2017. URL: https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf

3.4.2.7 California Green Building Standards

Part 11 of Title 24 is specifically addressed as the California Green Building Standards Code (CalGreen Code). The 2016 CalGreen Code also became effective January 1, 2017. The specific purpose of the CalGreen Code is to improve public health, safety, and general welfare by enhancing the design and construction of buildings with building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices in the categories of planning and design; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality.

3.4.3 Local Climate Change Policy

3.4.3.1 SJVAPCD

In 2009, the SJVAPCD adopted a comprehensive regional policy and guidance on addressing and mitigating GHG emission impacts caused by industrial, commercial, and residential development in the San Joaquin Valley. This set of guidance documents was designed to assist local permitting agencies and businesses by answering several questions related to CEQA and how to address GHG impacts under existing CEQA law.

To assist Lead Agencies, project proponents, permit applicants, and interested parties in assessing and reducing the impacts of project specific GHG emissions on global climate change, the SJVAPCD has adopted the guidance: Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA[39]. The guidance and policy rely on the use of performance-based standards, otherwise known as Best Performance Standards (BPS), to assess significance of project specific GHG emissions on global climate change during the environmental review process, as required by CEQA. Use of BPS is a method of streamlining the CEQA process of determining significance and is not a required emission reduction measure. Projects implementing BPS would be determined to have a less than cumulatively significant impact. Otherwise, demonstration of a 29% reduction[40] in GHG emissions, from BAU, is required to determine that a project would have a less than cumulatively significant impact. The guidance does not limit a lead agency's authority in establishing its own process and guidance for determining significance of project related impacts on global climate change.

3.4.3.2 Kings County Association of Governments (KCAG)

SB 375 requires ARB to develop regional reduction targets for GHG and prompts the creation of regional plans to reduce emissions from vehicle use throughout the State. KCAG is the agency responsible for creating that regional plan or "Sustainable Communities Strategy" (SCS) for Kings County. KCAG has coordinated with the other seven metropolitan planning organizations in the SJV to ensure compatibility with their SCS strategies and create Valley-wide SCS.

39 https://www.valleyair.org/Programs/CCAP/12-17-09/3%20CCAP%20-%20FINAL%20LU%20Guidance%20-%20Dec%2017%202009.pdf.

40 Even though ARB's new 2011 Scoping Plan has reduced the 2020 BAU, which therefore reduces the percent reduction necessary to achieve the 1990 levels in 2020, the SJVAPCD *Guidance for Valley Land-Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* document has not been updated to reflect the changes.

3.4.3.3 Final Regional Climate Action Plan (CAP)

The Regional Climate Action Plan[41] (CAP) is a long-range policy document that identified cost-effective measures to reduce GHG emissions from activities within Kings County consistent with AB 32.

The Baseline inventory for GHG emissions in Kings County was quantified by the SJVAPCD. This inventory included all sources within the region, including those on State and Federal Lands. However, since the CAP was intended for local governmental uses, this CAP addressed only those emission sources over which the local agencies has some degree of ownership. For purposes of full disclosure, Appendix A of this CAP presents data of the SJVAPCD's Countywide 2005 inventory to generate the Adjusted Inventory – Local Government Control presented in **Table 3.4-1**.

The CAP contains GHG reduction measures and actions that incorporates and/or builds on many of the policies and implementation programs identified in the local jurisdictions' General Plans, and are also consistent with a number of other policy and guidance documents, including the Kings County Blueprint (2011), Kings County Smart Growth Principles (2008), and Kings Regional Bicycle Plan (2011), and Transit Development Plan (2008).

Table 3.4-1
GHG EMISSIONS UNDER LOCAL GOVERNMENT CONTROL BY SOURCE (2005)[42]

Source	Sub-source	2005 GHG Emissions (tCO_2e)	
Regional Emissions			
Electricity Consumption	Electricity Consumption	358,694	358,694
Fuel Combustion	Residential	86,529	283,536
	Commercial	65,887	
	Industrial	131,120	
Transportation	On-road Vehicles	470,435	477,343
	Off-road Vehicles	6,635	
	Marine Vessel/Watercraft	273	
Waste Management	Landfills	11,394	19,562
	Wastewater Management	8,168	
Total Regional GHG Emissions			**1,139,135**
Sequestration			
Other Sources	Composting (Commercial)	-54,747	-92,331
	Resource Recovery	-25,141	
	Urban Forests	-12,443	
NET REGIONAL GHG EMISSIONS			***1,046,804***

41 Final Regional Climate Action Plan. Kings County Association of Governments. May 28, 2014.
42 Ibid.

Some measures that may be appropriate for the project are listed below:

Energy Measures

- E-2: Energy Audit and Retrofit Program
  Facilitate voluntary energy assessments, retrofits, and retrocommissioning[43] of existing residential and nonresidential buildings and public lighting.

- E-4: On-Site Small-Scale Solar Energy
  Facilitate the installation and use of on-site small-scale solar photovoltaic systems and solar hot water heaters in households and businesses.

Transportation and Land Use Measures

- TL-1: Infill and Mixed-Use Development
  Facilitate mixed-use, higher density, and infill development near transit stops, in existing community centers/ downtown, and in other designated areas.

- TL-3: Expand Transit Network
  Continue to expand and improve the transit network and its accessibility.

- TL-6: Electric Vehicle Readiness
  Expand the use of electric vehicles through implementation of a comprehensive electric vehicle network.

Solid Waste Measures

- S-1: Solid Waste Reduction and Recycling
  Increase recycling, composting, source reduction, and education efforts to reduce the amount of solid waste sent to landfills.

4.0 Significance Criteria

The CEQA and the SJVAPCD have established air pollution thresholds for projects to be evaluated, and to assist lead agencies in determining a project's significance.

4.1 Criteria Pollutants

4.1.1 California Environmental Quality Act (CEQA)

Appendix G of the CEQA Guidelines states that a significant effect on air quality would occur when a project would:

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

43 Retrocommissioning is a systematic process for identifying less-than-optimal performance in a facility's equipment, lighting and control systems and making the necessary adjustments. While retrofitting involves replacing outdated equipment, retrocommissioning focuses on improving the efficiency of what's already in place.

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (AAQS);

- Expose sensitive receptors to substantial pollutant concentrations; or

- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

As stated in **Appendix G**, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. The SJVAPCD has established regional significance thresholds.

4.1.2 District Significance Thresholds

4.1.2.1 Criteria Pollutants

The SJVAPCD provides a guide intended to be an advisory document for use by other agencies, consultants, and project proponents. The recommended version of this advisory document is the GAMAQI - 2012.[44] This document establishes thresholds of significance for criteria pollutants that the SJVAPCD recommends being used when evaluating project-specific impacts in the SJV. The SJVAPCD has based the criteria thresholds on limits established in its New Source Review rule (Rule 2010), which is a major component of its attainment strategy as it relates to growth and applies to new and modified stationary sources of air pollution. Non-compliance with a threshold of significance means the effect will normally be determined to be significant. Compliance with a threshold of significance means the effect normally will be determined to be less than significant.

The list of the SJVAPCD's adopted thresholds of significance for criteria pollutant emissions and their application is presented in Toxic Air Contaminant Emissions **Table 4.1-1**.

Toxic pollutants in California are generally categorized by carcinogenic and non-carcinogenic effects.

The non-carcinogenic effects can be further broken down into long-term (chronic) health effects such as birth defects, neurological damage, or genetic damage and short-term (acute) effects such as eye irritation, respiratory irritation, and nausea.

4.1.2.2 Toxic Air Contaminant Emissions

Toxic pollutants in California are generally categorized by carcinogenic and non-carcinogenic effects. The non-carcinogenic effects can be further broken down into long-term (chronic) health effects such as birth defects, neurological damage, or genetic damage and short-term (acute) effects such as eye irritation, respiratory irritation, and nausea.

44 Guide for Assessing and Mitigating Air Quality Impacts. DRAFT #2. San Joaquin Valley Air Pollution Control District. May 31, 2012.

Table 4.1-1
AIR QUALITY THRESHOLDS OF SIGNIFICANCE – CRITERIA POLLUTANTS[45]

Pollutant/Precursor	Emissions in Tons per Year	
	During Short-term Construction	During Long-term Operations
Carbon Monoxide (CO)	100	100
Nitrogen Oxides (NO_X)	10	10
Reactive Organic Gases (ROG)	10	10
Sulfur Oxides (SO_X)	27	27
Suspended Particulate Matter (PM_{10})	15	15
Fine Particulate Matter ($PM_{2.5}$)	15	15

4.1.2.3 Odors

While offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and the District. Any project with the potential to expose members of the public frequently to objectionable odors should be deemed to have a significant impact.

Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, there are no quantitative or formulaic methodologies to determine if potential odors would have a significant impact. Rather, projects must be assessed on a case-by-case basis. Lead agencies should consider all available pertinent information to determine qualitatively if a significant impact is likely to occur. Odor impacts on residential areas and other sensitive receptors, such as hospitals, day-care centers, schools, etc., warrant the closest scrutiny, but consideration should also be given to other land uses where people may congregate, such as recreational facilities, worksites, and commercial areas.

The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The SJVAPCD has identified some common types of facilities that have been known to produce odors in the SJV. The SJVAPCD has established a table of screening levels (see **Table 4.1-2**) that can be used as a screening tool to assess a project's potential qualitatively to adversely affect area receptors. This list of facilities is not all-inclusive. The SJVAPCD recommends that the Lead Agency should evaluate facilities not included in the table or projects separated by greater distances if warranted by local conditions or special circumstances. If the proposed project would result in sensitive receptors being located closer than the screening level distances, a more detailed analysis should be provided.

45 Ibid.

4.1.2.4 Rule 9510 Transportation/Transit Applicability Threshold

The ISR Rule addresses transportation and transit development projects in the "Applicability" section that states that the Rule shall only apply to such developments whose construction exhaust emissions would equal or exceed two tons of NO_X or two tons of PM_{10}.

Table 4.1-2
SCREENING LEVELS FOR POTENTIAL ODOR SOURCES

Type of Facility	Distance
Wastewater Treatment Facilities	2 miles
Sanitary Landfill	1 mile
Transfer Station	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations (e.g. auto body shops)	1 mile
Food Processing Facility	1 mile
Feed Lot/Dairy	1 mile
Rendering Plant	1 mile

4.1.2.5 Cumulative Impacts

When assessing whether there is a new significant cumulative effect, the Lead Agency shall consider whether the incremental effects of the project are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

A lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program, including, but not limited to an air quality attainment or maintenance plan that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located.

For development projects, the SJVAPCD has recognized that since the SIP accounts for annual increases in air pollutant emissions resulting from regional growth (including construction-generated emissions) anticipated according to local land use plans and the SJVAPCD's attainment plans include innovative strategies, such as the highly successful Emissions Reduction Incentive Program, Rule 9410, Healthy Air Living, and District Rule 9510 (ISR Rule), any proposed development project that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact.

4.2 Greenhouse Gas (GHG) / Climate Change

The CEQA and the SJVAPCD have established GHG threshold guidance for projects to be evaluated, and to assist lead agencies in determining a project's significance.

4.2.1 California Environmental Quality Act (CEQA)

Effective March 18, 2010, CEQA Appendix G states that a project would have potentially significant GHG emission impacts if it would:

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

- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

4.2.2 District Significance Thresholds

It is widely recognized that no single project could generate enough GHG emissions to noticeably change the global climate temperature. However, the combination of GHG emissions from past, present and future projects could contribute substantially to global climate change. Thus, project specific GHG emissions should be evaluated in terms of whether they would result in a cumulatively significant impact on global climate change.

In the SJVAPCD's Staff Report,[46] staff reviewed the relevant scientific information and concluded that the existing science is inadequate to support quantification of the extent to which project specific GHG emissions would impact global climate features such as average air temperature, average rainfall, or average annual snow pack. In other words, the District was not able to determine a specific quantitative level of GHG emissions increase, above which a project would have a significant impact on the environment, and below which would have an insignificant impact.

In the absence of scientific evidence supporting establishment of a numerical threshold, the SJVAPCD policy applies performance-based standards to assess project specific GHG emission impacts on global climate change. The determination is founded on the principle that projects whose emissions have been reduced or mitigated consistent with AB 32, should be considered to have a less than significant impact on global climate change. The SJVAPCD provides a tiered approach in assessing significance of project specific GHG emission increases.[47]

- Projects complying with an approved GHG emission reduction plan or GHG mitigation program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less than significant individual

46 Addressing Greenhouse Gas Emissions Impacts Under the California Environmental Quality Act. Final Staff Report. San Joaquin Valley Air Pollution Control District. December 17, 2009. Internet: https://www.valleyair.org/Programs/CCAP/12-17-09/1%20CCAP%20-%20FINAL%20CEQA%20GHG%20Staff%20Report%20-%20Dec%2017%202009.pdf. Accessed October 4, 2019.

47 Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA. San Joaquin Valley Air Pollution Control District. December 17, 2009. Internet: https://www.valleyair.org/Programs/CCAP/12-17-09/3%20CCAP%20-%20FINAL%20LU%20Guidance%20-%20Dec%2017%202009.pdf. Accessed October 4, 2019.

and cumulative impact for GHG emissions. Projects complying with an approved GHG emission reduction plan or GHG mitigation program would not be required to implement Best Performance Standards (BPS).

- Projects implementing BPS would not require quantification of project specific GHG emissions. Consistent with the CEQA Guidelines, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions.

- Projects not implementing BPS would require quantification of project specific GHG emissions and demonstration that project specific GHG emissions would be reduced or mitigated by at least 29%, compared to BAU, including GHG emission reductions achieved since the 2002-2004 baseline period, consistent with GHG emission reduction targets established in ARB's AB 32 Scoping Plan. Projects achieving at least a 29%[48] GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG.

5.0 Impact Analysis

5.1 Methodology and Assumptions

The impact analysis is based on an understanding of the existing ambient air quality of the SJVAB; review of existing technical data, aerial maps, and applicable laws, regulations, and guidelines; and emission inventory calculations. The California Emissions Estimator Model (CalEEMod®), Version 2016.3.2, land use and air emissions model were utilized to estimate annual emissions from the construction and operational phases of the project.[49]

Construction of the project would result in temporary emissions of ROG, CO, NO_X, SO_X, PM_{10}, $PM_{2.5}$, and GHGs. Emissions from construction activities would result from fuel combustion and exhaust from construction equipment and vehicle traffic (i.e., worker commute and delivery truck trips), and grading and site work. Long-term operational criteria pollutant emissions will come from mobile sources, such as buses; and area sources, such as landscaping and reapplication of architectural coatings. For GHG emissions, CalEEMod also estimates indirect emissions from energy use, water supply, wastewater, and solid waste. A detailed summary of the assumptions and model data used to estimate the project's emissions are provided in **Attachment A.**

Other air quality impacts (i.e., local emissions of CO, odors, and construction- and operation-related TACs) were assessed in accordance with methodologies recommended by the ARB and SJVAPCD.

48 Even though ARB's new 2011 Scoping Plan has reduced the 2020 BAU which therefore reduces the percent reduction necessary to achieve the 1990 levels in 2020, the SJVAPCD Guidance for Valley Land-Use Agencies document has not been updated to reflect the changes.

49 Although many CEQA analyses are based upon estimates of daily emissions, the SJVAPCD's significance criteria are based upon annual emissions.

5.2 Analysis of Impacts

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

If implemented, the Proposed Project would generate both temporary (construction) and long-term (operational) emissions. The consistency with the SJVAPD's is discussed below for construction and operations separately.

Construction

The SJVAPCD's attainment strategy as it relates to growth is directly related to its NSR rule, as implementation of NSR ensures that there is no net increase in emissions above specified thresholds from new and modified stationary sources for all nonattainment pollutants and their precursors. The SJVAPCD thresholds of significance for criteria pollutants are applied to evaluate regional impacts of project-specific emissions of air pollutants and their impact on the SJVAPCD's ability to reach attainment.

Operational

State CEQA Guidelines and the FCAA (Sections 176 and 316) contain specific references on the need to evaluate consistencies between a Proposed Project and the applicable AQP for the project sites. To accomplish this, the ARB has developed a three-step approach to determine project conformity with the applicable AQP:

1. Determination that an AQP is being implemented in the area where the project is being proposed. The SJVAPCD has implemented the current, modified AQP as approved by the ARB. The current AQP is under review by the USEPA

2. The proposed project must be consistent with the growth assumptions of the applicable AQP. The growth assumptions used by the SJVAPCD in its latest air quality plan (2018 $PM_{2.5}$ Plan) were based on the California Division of Finance's March 2017 released revised population growth projections. The population in Kings County is expected to increase by 13.6% between 2015 and 2030. Since the proposed project is a transit/commercial project not specifically designed to attract new permanent residents to the County and does not contain a residential component, it would be considered consistent with the growth assumptions of the applicable AQPs.

3. The project must contain in its design all reasonably available and feasible air quality control measures. The proposed project incorporates Regulation VIII dust measures and will comply with the ISR Rule (Rule 9510).

Because no significant project-induced growth is anticipated, conclusions may be drawn from the following criteria:

- The proposed emissions from the project are, by definition, below the SJVAPCD's established emissions impact thresholds.

- The primary source of emissions from the project would be traffic from vehicles that are licensed through the State of California and whose emissions are already incorporated into the ARB's SJV Emissions Inventory.

Operation of the proposed project would not exceed any established SJVAPCD thresholds; therefore, implementation of the proposed project would not obstruct implementation of an air quality plan during operation.

Additionally, to assist the implementation of the AQMP, projects must not create regionally significant emissions of regulated pollutants from either short-term construction or long-term operations.

Short-term Construction

Construction is scheduled to begin in July 2021 and conclude before July 2022. Construction activities include demolition, site preparation, grading, building construction, paving, and architectural coating. Construction would result in emissions of the criteria air pollutants ROG, NO_X, CO, PM_{10}, $PM_{2.5}$, and SO_X as a result of fuel combustion and exhaust and entrainment of dust from construction equipment, as well as from vehicle traffic and the evaporation of volatile components of materials such as paints and lubricants.

Criteria pollutant emissions from off-road construction equipment use were estimated using the CalEEMod computer model. Default equipment type and activity levels for each activity phase were used. **Table 5.2-1** presents the proposed project's annual emissions from construction activities. (Detailed emissions calculations are included in **Attachment A**). Note that emissions presented take into account reductions required for compliance with the SJVAPCD's Regulation VIII Fugitive Dust Rules. They also assume that Tier 4 engines will be required for demolition and construction equipment, wherever commercially available.

Table 5.2-1 shows that the SJVAPCD thresholds are not exceeded in either construction year. In addition, the combined construction NO_x exhaust emissions for two years do not exceed the two-ton threshold for applicability of the ISR Rule. The project is therefore exempt from ISR requirements.

Operational

- CalEEMod was also used to estimate the operational emissions, which include emissions from mobile sources associated with the facility, natural gas usage, architectural coatings, consumer products, and landscaping equipment.

Table 5.2-1
ESTIMATED ANNUAL CONSTRUCTION EMISSIONS

Year - Construction Phase	Criteria Emissions (tons/year)					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
2021 - Demolition	0.009	0.065	0.238	0.000	0.010	0.004
2021 - Site Preparation	0.001	0.005	0.054	0.000	0.018	0.010
2021 - Grading	0.003	0.029	0.068	0.000	0.012	0.006
2021 - Building Construction	0.080	0.688	0.886	0.001	0.039	0.035
2021 Total	**0.09**	**0.79**	**1.25**	**0.00**	**0.08**	**0.05**
2022 - Building Construction	0.081	0.689	0.969	0.002	0.038	0.033
2022 - Paving	0.006	0.056	0.089	0.000	0.005	0.003
2022 - Architectural Coating	0.133	0.010	0.013	0.000	0.001	0.001
2022 Total	**0.22**	**0.76**	**1.07**	**0.00**	**0.04**	**0.04**
SJVAPCD Threshold	*10*	*10*	*100*	*27*	*15*	*15*
Exceed Thresholds any Year?	*No*	*No*	*No*	*No*	*No*	*No*
Project Total*		**1.54**			**0.12**	
ISR Rule 9510 Threshold		*2*			*2*	
Exceed Thresholds?		***No***			*No*	

* ISR Rule 9510 is only concerned with combustion-generated NO_X and PM_{10} emissions

Emissions for each operational category are presented in **Table 5.2-2**, which shows that the Project's unmitigated operational emissions would not exceed any SJVAPCD regional operational thresholds. Detailed emissions calculations are included in **Attachment A**.

Table 5.2-2
ESTIMATED UNMITIGATED OPERATIONAL CRITERIA POLLUTANT EMISSIONS

Emission Category	Criteria Emissions (tons/year)					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Mobile	0.242	2.039	71.29	0.005	0.653	0.241
Energy	0.001	0.008	0.006	0.000	0.001	0.001
Area	0.088	0.000	0.003	0.000	0.000	0.000
Operational Total	***0.33***	***2.05***	***71.3***	***0.01***	***0.65***	***0.24***
SJVAPCD Threshold	*10*	*10*	*100*	*27*	*15*	*15*
Exceed Thresholds?	*No*	*No*	*No*	*No*	*No*	*No*

In summary, construction and operational activities of the Proposed Project would have a less-than-significant impact with respect to a violation of air quality standards or contributing substantially to an existing or projected air quality violation.

Level of Significance before Mitigation: The Proposed Project would not violate air quality standards or contribute to an existing or projected air quality violation. They would therefore be less than significant.

Mitigation Measure

No mitigation will be necessary.

Level of Significance After Mitigation: No mitigation will be necessary.

b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

In accordance with CEQA Guidelines 15130(b), this analysis of cumulative impacts incorporates a summary of projections. The following three-tiered approach was used to assess cumulative air quality impacts.

- Consistency with the SJVAPCD project specific thresholds for construction and operation;
- Project consistency with existing air quality plans; and
- Assessment of the cumulative health effects of the pollutants.

Project Specific Thresholds

As established previously in Impact **a)**, emissions are not expected to exceed the SJVAPCD regional significance thresholds. It is assumed that emissions that do not exceed the project specific thresholds will not result in a cumulative impact.

Air Quality Plans

As established previously in Impact **a)**, the proposed project is consistent with the latest ozone, PM_{10}, and $PM_{2.5}$ attainment plans that were established to document the strategies and measures to be undertaken to reach attainment of ambient air quality standards. While the SJVAPCD does not have direct authority over land use decisions, it was recognized that changes in land use and circulation planning were necessary to maintain clean air. The Project is compliant with the air quality plans and would not result in a significant impact.

Cumulative Health Impacts

The area is nonattainment for ozone and $PM_{2.5}$, which means that the background levels of those pollutants are at times higher than the ambient air quality standards. The area is a maintenance area for PM_{10}, which means that the PM_{10} AAQS have been attained, but the measures used to meet the standard must continue to prevent future violations. The air quality standards were set to protect the health of sensitive individuals (i.e., elderly, children, and the sick). Therefore, when the

concentration of those pollutants exceeds the standard, it is likely that some of the sensitive individuals of the population experience adverse health effects.

The significance analysis in Impact **a)** demonstrated that no significance threshold was expected to be exceeded; therefore, the emissions from the proposed project would not result in a significant cumulative health impact.

Level of Significance before Mitigation: The Proposed Project would not 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.

Mitigation Measures: No mitigation measures are necessary.

Level of Significance After Mitigation: Impacts would be less than significant.

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

Sensitive receptors are defined as land uses where sensitive population groups (e.g., children, the elderly, the acutely ill, and the chronically ill) are likely to be located. These land uses include residences, schools, childcare centers, retirement homes, convalescent homes, medical care facilities, and recreational facilities. Sensitive receptors that may be adversely affected by the proposed project include the surrounding residential land uses.

Localized Dust

Impacts to sensitive receptors, particularly from dust, would vary depending on the level and type of activity, the silt content of the soil, and prevailing weather. As mentioned above, the project is in downtown Hanford in a commercial-dominant area; however, it is adjacent and near to residential structures. Therefore, a public display of compliance with Regulation VIII will be important. The proposed project's diligent compliance with Regulation VIII and any requirements due to the ISR Rule will prevent the residences from being exposed to substantial pollutant concentrations.

Level of Significance before Mitigation: The proposed project would not expose the public to substantial pollutant concentrations, but the public still may perceive a potential problem.

Mitigation Measure: While no mitigation measures are necessary, there is a valid potential expectation for dust complaints being filed due to the proximity of sensitive receptors. To allay their concerns, the following mitigation is recommended:

MM AQ-1 Prior to commencing and construction activity, the Applicant will provide notices that show a schedule for major construction activities that will occur through the duration of the construction period. In addition, the notification will include the identification and contact number for a community liaison and designated construction manager that would be available onsite to monitor construction activities. The construction manager shall be responsible for complying with all project requirements related to PM_{10} generation. He or she will be located at the onsite construction office during construction hours for the duration of all construction activities. Contact information for the community liaison and construction manager will be located at the construction office, City Hall, the police department, and on a sign onsite.

Level of Significance After Mitigation: Impacts would be less than significant.

d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

The CEQA Guidelines indicate that a significant impact would occur if a project would create objectionable odors affecting a substantial number of people. Because no requirements for odor control are included in state or federal air quality regulations, the SJVAPCD has no rules or standards related to odor emissions, other than its nuisance rule.

Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, there are no quantitative or formulaic methodologies to determine the presence of a significant odor impact. The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The proposed project is not one of the common types of facilities listed in the GAMAQI as known to produce odors. Therefore, it would not result in a significant odor impact.

Level of Significance before Mitigation: The proposed project would not result in other emissions affecting a substantial number of people.

Mitigation Measures: No mitigation measures are necessary.

Level of Significance After Mitigation: Impacts would be less than significant.

e) Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

The GHG emissions inventory for this analysis includes the following sources of annual direct and indirect emissions: (1) area sources (e.g., landscaping-related fuel combustion sources and natural gas fireplaces); (2) energy use associated with buildings; (3) water and wastewater; (4) solid waste; (5) mobile sources (e.g., passenger vehicles and trucks); and (6) construction activity. The ongoing operational emissions consist of the first five categories, while emissions associated with construction are one-time only. The typical types of GHG gases resulting from developments such as the project are CO_2, CH_4, and N_2O.

The major construction phases included in this analysis are demolition, site preparation, grading, building construction, paving, and architectural coating. Emissions are from off-road construction equipment and onroad vehicles such as worker and vendor commuting and trucks for soil and material hauling. CalEEMod defaults were used for construction activity and equipment usage. To assess the temporary construction effect on the Project's overall lifetime GHG emissions, the South Coast Air Quality Management District (SCAQMD) developed an Interim Guidance[50] that recommends that construction emissions should be amortized over the life of the project, defined in the Guidance as 30 years, which is then added to the operational emissions and compared to the applicable GHG significance threshold.

GHG emissions would also continue to occur every year after buildout. GHGs are emitted from buildings as a result of activities for which electricity and natural gas are typically used as energy

50 *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules, and Plans*. South Coast Air Quality Management Board. Adopted December 5, 2008.

sources. Combustion of any type of fossil fuel emits CO_2 and other GHGs directly into the atmosphere; these emissions are considered direct emissions when associated with a building. GHGs are also emitted during the generation of electricity from fossil fuels; these emissions are indirect emissions as they occur elsewhere but are attributed to the power usage onsite. Indirect GHG emissions also result from the production of electricity used to convey, treat, and distribute water and wastewater. The amount of electricity required to convey, treat and distribute water depends on the volume of water as well as the sources of the water. In addition, CalEEMod calculates the indirect GHG emissions associated with waste that is disposed of at a landfill using waste disposal rates by land use and overall composition. CalEEMod defaults were used throughout.

The GHG analysis also considered emissions from KART bus operations. Emissions from current operations were not considered because they are assumed to continue unchanged at the new facility. Impacts from GHG emissions are regional and global, so relocating the facility a short distance does not change them. However, because of the projected halving of headways for the buses on routes only within Hanford, VMT will double, and so will GHG emissions. Therefore, this increase in GHG emissions was calculated and taken into account in the analysis.

A summary of all GHG emissions from the proposed project is presented in **Table 5.2-3**.

Table 5.2-3
PROPOSED PROJECT GHG EMISSIONS

Category	CO_2e (tonnes/year)
Direct – Amortized Construction	11.4
Direct – Mobile (Operational)	3,442[a]
Direct – Area Source	>0.1
Indirect – Purchased Electricity (Power)	30.6
Indirect – Purchased Natural Gas (Power)	8.5
Indirect – Purchased Electricity (Water)	6.5
Direct – Fugitive – Solid Waste	27.5
TOTAL	**3,527**
[a]Includes 3,008 tonnes per year from increased bus travel in the city of Hanford.	

As was discussed in **Section 4.2.2**, the SJVAPCD has concluded that it was not possible to determine a specific quantitative level of GHG emissions increase that would be significant under CEQA. Instead, GHG impacts are less than significant if they adhere to Best Performance Standards (BPS). BPS may be defined by a project applicant, as long as they are consistent with SJVAPCD guidelines. In addition, the SJVAPCD has published a number of BPS, some of which include public transit as one element of many factors that reduce GHG emissions for some types of development.

None of the published BPS is specific to a transit facility such as the proposed KART station. However, it is generally recognized that public transit *per se* reduces passenger car VMT and emissions per passenger mile. For example, the FTA reports[51] that the average public transit bus in the U.S. emits 0.64 pound of CO_2 per passenger mile, compared to 0.96 pound per mile from a single-occupancy passenger vehicle.[52] Therefore, increasing the frequency of service on the Hanford routes will cause at least some travelers to switch from passenger vehicles to public transit, thereby reducing GHG emissions.

As noted in **Section 3.3.2.2**, transportation and transit station development are exempt from SJVAPCD operational indirect source review requirements. This is evidence that the SJVAPCD recognizes the emission reduction benefits of transit developments.

In addition to increasing public transit services, the project will employ several strategies in the spirit of sustainability. It will install energy-efficient lighting; energy-efficient appliances, such as dishwashers, fans, and refrigerators; install solar photovoltaics on buildings or as parking lot shade (size is unknown at this time); install low-flow bathroom and kitchen faucets and low-flow toilets; and use water-efficient irrigation systems.

Level of Significance before Mitigation: The proposed project would not potentially generate direct and/or indirect emissions that may have a significant impact on the environment.

Mitigation Measures: No mitigation measures are necessary.

Level of Significance After Mitigation: Impacts would be less than significant.

f) Would the Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

The SJVAPCD has established its Land Use Guidelines as a component of its overall Climate Change Action Plan (CCAP).[53] The Proposed Project would be consistent with the SJVAPCD's CCAP. In summary, the Proposed Project would not conflict with any applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions. This would be a less than significant impact.

Level of Significance before Mitigation: The Proposed Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Mitigation Measures: No mitigation measures are necessary.

Level of Significance After Mitigation: Impacts would be less than significant.

51 Public Transportation's Role in Responding to Climate Change. U.S. Department of Energy, Federal Transit Administration, Updated January 2010. Internet: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/PublicTransportationsRoleInRespondingToClimateChange2010.pdf. Accessed October 2, 2019.

52 The value for buses is a national average. The emission factor can be as low as 0.18 pounds CO2 per passenger-mile for a fully loaded bus.

53 Final Staff Report - Climate Change Action Plan: Addressing GHG Emissions Impacts under CEQA. San Joaquin Valley Air Pollution Control District. December 17, 2009.