Air Quality/Greenhouse Gas Report

IRIS Cluster Solar Project

Imperial County

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Acronyms and Abbreviations

µg/m^3	micrograms per cubic meter
AAQS	ambient air quality standard
AB	Assembly Bill
ADAM	CARB's Aerometric Data Analysis and Management System
AQMP	Imperial County Air Quality Management Plan
AQR	Air Quality Report
AVTD	average vehicle trips per day
BACM	Best Available Control Measure
BACT	Best Available Control Technology
BAU	business as usual
CAAQS	California Ambient Air Quality Standards
CalEEMod™	California Emissions Estimator Model
CAQAR	Comprehensive Air Quality Analysis Report
CARB	California Air Resources Control Board
CAT	Climate Action Team
CEQA	California Environmental Quality Act
CFC	chlorofluorocarbon
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
DPM	diesel particulate matter
EI	emission inventory
EIR	Environmental Impact Report
EMFAC	Emission Factors model for on-road mobile sources
EPA	United States Environmental Protection Agency
ESRL	Earth System Research Laboratory
FCAA	Federal Clean Air Act
FSF	Ferrell Solar Farm
gen-tie	generator tie-ins
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
HRA	Health Risk Assessment
ICAPCD	Imperial County Air Pollution Control District
IPCC	International Panel on Climate Change
IRIS Cluster	IRIS Cluster Solar Project
ISF	Iris Solar Farm
LSF	Lyons Solar Farm
M	million
$MtCO_2e$	million tonnes of carbon dioxide equivalents
MW	megawatt

Acronyms and Abbreviations

N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NO	nitric oxide
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NO_X	nitrogen oxides
O&M	operations and maintenance
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
ppb	parts per billion
ppm	parts per million
PV	photovoltaic
ROG	reactive organic gases
RPS	Renewables Portfolio Standard
RSF	Rockwood Solar Farm
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SF_6	sulfur hexafluoride
SIP	State Implementation Plan
SSAB	Salton Sea Air Basin
t	abbreviation for tonne (or metric ton)
TAC	toxic air contaminants
tCO_2e	tonne of carbon dioxide equivalents
TIA	Traffic Impact Analysis
URBEMIS	Urban Emissions computer model
VDE	Visible Dust Emissions
VMT	Vehicle miles travelled
WP	WorleyParsons
WRI	World Resources Institute

SECTION 1.0 – INTRODUCTION

1.1. Report Purpose

The purpose of this Air Quality Report (AQR) is to analyze the potential air quality and climate change impacts that could occur with the construction and operation of the Iris Cluster Solar Project (IRIS Cluster), in Imperial County, California. 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 CEQA Air Quality Handbook[1] prepared by the Imperial County Air Pollution Control District (ICAPCD) for quantification of emissions and evaluation of potential impacts to air resources.

1.2. Project Location

The IRIS Cluster site will be approximately 2 miles west of the City of Calexico, California in southern Imperial County. The IRIS Cluster site is adjacent to the recently constructed Mount Signal Solar Farm I. The IRIS Cluster site is generally located between State Route 98 to the south, Kubler Road and Preston Road to the north, Weed Road to the east, and Brockman Road to the west (see Figure 1). Agricultural uses lie to the north and east, and solar farms are planned or completed/constructed to the west and to the south.

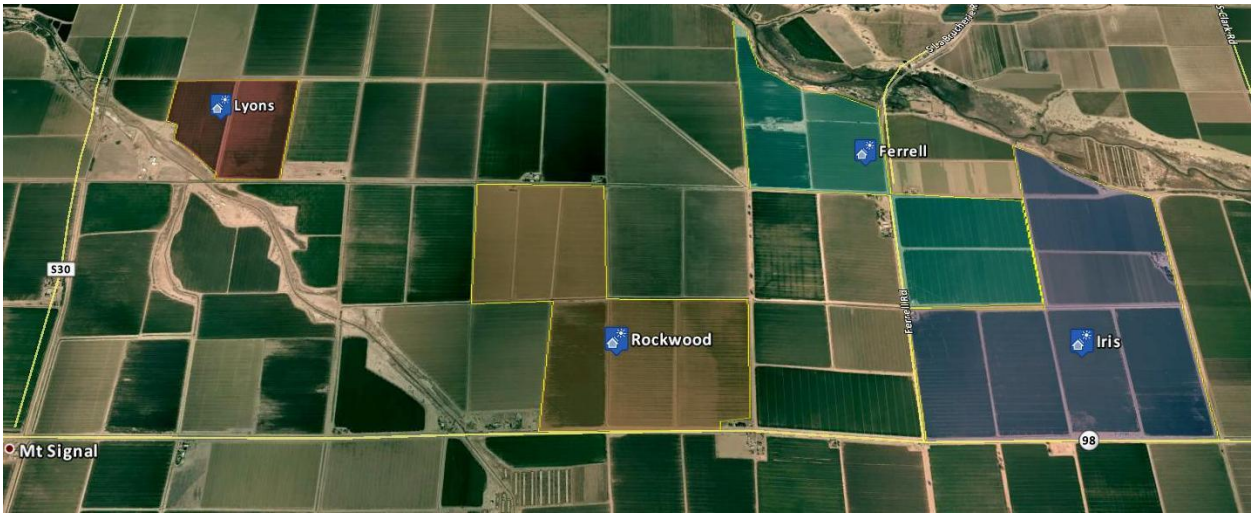

Figure 1 – Project Location

1.3. Project Description

85JP 8ME, LLC, known herein as the "Applicant", is proposing the development of four utility-scale solar farms in Imperial County, California collectively known as the IRIS Cluster. The four projects (each a "Project") are as follows: Ferrell Solar Farm (FSF), Rockwood Solar Farm (RSF), Iris Solar Farm (ISF), and Lyons Solar Farm (LSF). Gross acreage and proposed size in megawatts (MW) for each project is presented in Table 1. Projects may cooperate if necessary to meet power production requirements. Each Project is intended to have operations and maintenance (O&M) facilities and an on-site substation, but may also utilize shared facilities.

[1] CEQA Air Quality Handbook: Guidelines for the Implementation of the California Air Quality Act of 1970, and amended. Imperial County Air Pollution Control District, November 2007.

Table 1 – IRIS Cluster Components

Site Name	Abbr.	Gross Acreage	Size (MW)
Ferrell Solar Farm	FSF	367.1	90
Rockwood Solar Farm	RSF	396.2	100
Iris Solar Farm	ISF	520.8	130
Lyons Solar Farm	LSF	138.4	40
TOTAL for IRIS Cluster		***1,422.5***	***360***

Each solar site will utilize photovoltaic (PV) panels or modules on mounting frameworks to convert sunlight directly into electricity. Individual panels will be installed on either fixed-tilt or tracker mount systems (single- or dual-axis, using galvanized steel or aluminum). If the panels are configured for fixed tilt, the panels will be oriented toward the south. For tracking configurations, the panels will rotate to follow the sun over the course of the day. The panels will stand up to 30 feet high, depending on mounting system used. All of the sites have historically been used for agriculture and are relatively flat.

In addition to the PV panels, the sites will include inverter stations, energy storage units, substations, generator tie-in lines (gen-ties), above-ground water storage tanks, and O&M buildings. Sites near each other may share O&M, substations, and/or transmission facility areas with neighboring sites. For conservative estimates, this AQR assumes that each site will construct separate facilities.

After the useful life of the Project (up to 40 years), the panels are easily disassembled from the steel mounting frames and the site restored to pre-development condition.

SECTION 2.0 – EXISTING CONDITIONS

Air quality is determined primarily by the type and amount 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. Climatology/ Meteorology

Meteorology is the study of weather and climate. Weather refers to the state of the atmosphere at a given time and place with regard to temperature, air pressure, humidity, cloudiness, and precipitation. The term "weather" refers to conditions over short periods; conditions over long periods, generally at least 30 to 50 years, are referred to as climate. Climate, in a narrow sense, is usually defined as the "average weather," or more rigorously as the statistical description in terms of the mean and variability of relevant quantities over a period ranging from months to thousands or millions of years. These quantities are most often surface variables such as temperature, precipitation, and wind.

Climatic conditions in Imperial County are governed by the large-scale sinking and warming of air in the semi-permanent tropical high-pressure center of the Pacific Ocean. The high-pressure ridge blocks out most mid-latitude storms except in winter when the high is weakest and farthest south. The coastal mountains prevent the intrusion of any cool, damp air found in California coastal environs. Because of the weakened storms and barrier, Imperial County experiences clear skies, extremely hot summers, mild winters, and little rainfall. The flat terrain of the valley and the strong temperature differentials created by intense solar heating, produce moderate winds and deep thermal convection.

The combination of subsiding air, protective mountains, and distance from the ocean all combine to limit precipitation severely. Rainfall is highly variable with precipitation from a single heavy storm sometimes exceeding the entire annual total during a later drought condition.

Imperial County enjoys a year-round climate characterized by a temperate fall, winter, and spring and a harsh summer. Humidity often combines with the valley's normal high temperatures to produce a moist, tropical atmosphere that frequently seems hotter than the thermometer suggests. The sun shines, on the average, more in the Imperial County that anywhere else in the United States.

2.1.1 Temperature and Precipitation

The nearest National Weather Service Cooperative Observer Program weather station to the project is the station In El Centro called El Centro 2 SSW, located approximately 6 miles north-northeast of the Project. At the El Centro 2 SSW [2], average recorded rainfall during the Period of Record (1932 to 2013) measured 2.64 inches, with 94 percent of precipitation occurring between August and March and 32 percent in just December and January. Monthly average maximum temperatures at this station vary annually by 38.1 degrees Fahrenheit (ºF); 108.0 °F at the hottest to 69.9 ºF at the coldest and monthly average minimum temperatures vary by 36.2 °F annually; i.e. from 40.1 °F to 76.3 ºF. In fact, this station shows that the months of June, July, August, and September have monthly maximum temperatures greater than 100 ºF

[2] Western U.S. Climate Historical Summaries. Western Regional Climate Center. http://www.wrcc.dri.edu/Climsum.html. Accessed February 2014.

2.1.2 Humidity

Humidity in Imperial County is typically low throughout the year, ranging from 28 percent in summer to 52 percent in winter. The large daily oscillation of temperature produces a corresponding large variation in the relative humidity. Nocturnal humidity rises to 50-60 percent, but drop to about 10 percent during the day. Summer weather patterns are dominated by intense heat induced low-pressure areas that form over the interior desert.

2.1.3 Wind

The wind direction follows two general patterns. The first pattern occurs seasonally from fall through spring, where prevailing winds are from the west and northwest. Most of these winds originate in the Los Angeles Basins. The Imperial County area occasionally experiences periods of high winds. Wind speeds exceeding 31 mph occur most frequently in April and May. On an annual basis, strong winds, those exceeding 31 mph, are observed 0.6% of the time, where speeds of less than 6.8 mph account for more than one-half of the observed winds. Wind statistics indicate prevailing winds are from the west-northwest through southwest; however, a secondary flow pattern from the southeast is also evident.

2.1.4 Inversions

Air pollutant concentrations are primarily determined by the amount of pollutant emissions in an area and the degree to which these pollutants are dispersed in the atmosphere. The stability of the atmosphere is one of the key factors affecting pollutant dispersion. Atmospheric stability regulates the amount of vertical and horizontal air exchange, or mixing, that can occur within a given air basin. Horizontal mixing is a result of winds, as discussed above, but vertical mixing also affects the degree of stability in the atmosphere. An interruption of vertical mixing is called inversions.

In the atmosphere, air temperatures normally decrease as altitude increases. At varying distances above the earth's surface, however, a reversal of this gradient can occur. This condition, termed an inversion, is simply a warm layer of air above a layer of cooler air, and it has the effect of limiting the vertical dispersion of pollutants. The height of the inversion determines the size of the vertical mixing volume trapped below. Inversion strength or intensity is measured by the thickness of the layer and the difference in temperature between the base and the top of the inversion. The strength of the inversion determines how easily it can be broken by winds or solar heating.

Imperial County experiences surface inversions almost every day of the year. Due to strong surface heating, these inversions are usually broken allowing pollutants to disperse more easily. Weak, surface inversions are caused by radiational cooling of air in contact with the cold surface of the earth at night. In valleys and low-lying areas, this condition is intensified by the addition of cold air flowing down slope from the hills and pooling on the valley floor.

The presence of the Pacific high-pressure cell can cause the air to warm to a temperature higher than the air below. This highly stable atmospheric condition, termed a subsidence inversion can act as a nearly impenetrable lid to the vertical mixing of pollutants. The strength of these inversions makes them difficult to disrupt. Consequently, they can persist for one or more days, causing air stagnation and the buildup of pollutants. Highest or worst-case ozone levels are often associated with the presence of this type of inversion.

2.2. Local Air Quality Conditions

2.2.1 Criteria Air Pollutants

As required by the Federal Clean Air Act (FCAA), the Environmental Protection Agency (EPA) has identified criteria pollutants and established National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. NAAQS have been established for ozone, CO, NO_2, sulfur dioxide, 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 (CARB) has established separate standards for the State, i.e. the California Ambient Air Quality Standards (CAAQS). CARB established CAAQS for all the federal pollutants and sulfates, hydrogen sulfide, and visibility-reducing particles.

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, carbon monoxide (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 standards are presented in Table 2 and the following text provides descriptions and health effects of each.

2.2.1.1 Ozone

Ozone is not emitted directly to the atmosphere, but is formed by photochemical reactions between reactive organic gases (ROG) and oxides of nitrogen (NO_X) in the presence of sunlight. The long, hot, humid days of summer are particularly contributing to ozone formation, thus, ozone levels are of concern primarily during the months of May through September.

- **Reactive organic gases (ROG)** are defined as any compound of carbon, excluding CO, carbon dioxide (CO_2), carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participate in atmospheric photochemical reactions. It should be noted that there are no State or national ambient air quality standard for ROG because ROGs are not classified as criteria pollutants. They are regulated, however, because a reduction in ROG emissions reduces certain chemical reactions that contribute to the formulation of ozone. ROGs are also transformed into organic aerosols in the atmosphere, which contribute to higher PM_{10} and lower visibility.
- **Nitrogen oxides (NO_X)** serve as integral participants in the process of photochemical smog production. The two major forms of NO_X are nitric oxide (NO) and nitrogen dioxide (NO_2). NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. NO_2 is a reddish-brown irritating gas formed by the combination of NO and oxygen. NO_X is an ozone precursor. A precursor is a directly emitted air contaminant that, when released into the atmosphere, forms, causes to be formed, or contributes to the formation of a secondary air contaminant for which an ambient air quality standard (AAQS) has been adopted, or whose presence in the atmosphere will contribute to the violation of one or more AAQSs. When NO_X and ROG are released in the atmosphere, they can chemically react with one another in the presence of sunlight to form ozone.

Ozone is a strong chemical oxidant that adversely impacts human health through effects on respiratory function. Ozone can also damage forests and crops. Ozone is not emitted directly by industrial sources or motor vehicles but instead, is formed in the lower atmosphere, the troposphere. Ozone is formed by a complex series of chemical reactions involving NO_X, the result of combustion processes and evaporative ROGs such as industrial solvents, toluene, xylene, and hexane as well as the various hydrocarbons that are evaporated from the gasoline used by motor vehicles or emitted through the tailpipe following combustion. Additionally, ROGs are emitted by natural sources such as trees and crops. Ozone formation is promoted by strong sunlight, warm temperatures, and winds. High concentrations tend to be a problem in the Imperial County only during the hot summer months when these conditions frequently occur.

2.2.1.2 Particulate matter (PM)

PM is a general term used to describe a complex group of airborne solid, liquid, or semi-volatile materials of various size and composition. Primary PM is emitted directly into the atmosphere from both human activities (including agricultural operations, industrial processes, construction and demolition activities, and entrainment of road dust into the air) and non-anthropogenic activities (such as windblown dust and ash resulting from forest fires). Secondary PM is formed in the atmosphere from predominantly gaseous combustion by-product precursors, such as sulfur oxides and NO_X, and ROGs. The overwhelming majority of airborne PM in Imperial County is primary PM. The major source of primary PM is fugitive windblown dust, with other contributions from entrained road dust, farming, and construction activities.

Particle size is a critical characteristic of PM that primarily determines the location of PM deposition along the respiratory system (and associated health effects) as well as the degradation of visibility through light scattering. In the United States, federal and state agencies have established two types of PM air quality standards as shown in Table 2. PM_{10} corresponds to the fraction of PM no greater than 10 microns in aerodynamic diameter and is commonly called respirable particulate matter, while $PM_{2.5}$ refers to the subset of PM_{10} of aerodynamic diameter smaller than 2.5 microns, which is commonly called fine particulate matter.

PM air pollution has undesirable and detrimental environmental effects. PM affects vegetation, both directly (e.g. deposition of nitrates and sulfates may cause direct foliar damage) and indirectly (e.g. coating of plants upon gravitational settling reduces light absorption). PM also accumulates to form regional haze, which reduces visibility due to scattering of light. Agencies concerned with haze include the National Park Service, the U.S. Forest Service, the Western Regional Air Partnership, and the Western States Air Resources Council.

PM_{10} is respirable, with fine and ultrafine particles reaching the alveoli deep in the lungs, and larger particles depositing principally in the nose and throat area. PM_{10} deposition in the lungs results in irritation that triggers a range of inflammation responses, such as mucus secretion and bronchoconstriction, and exacerbates pulmonary dysfunctions, such as asthma, emphysema, and chronic bronchitis. Sufficiently small particles may penetrate into the bloodstream and impact functions such as blood coagulation, cardiac autonomic control, and mobilization of inflammatory cells from the bone marrow. Individuals susceptible to higher health risks from exposure to PM_{10} airborne pollution include children, the elderly, smokers, and people of all ages with low pulmonary/ cardiovascular function. For these individuals in particular, adverse health effects of PM_{10} pollution include coughing, wheezing, shortness of breath, phlegm, bronchitis, and aggravation of lung or heart disease, leading for example to increased risks of hospitalization and mortality from asthma attacks and heart attacks.

2.2.1.3 Other Criteria Pollutants

The standards for other criteria pollutants are either being met or are unclassified in the Salton Sea Air Basin (SSAB), and the latest pollutant trends suggest that these standards will not be exceeded in the foreseeable future.

2.2.2 Pollutant Transport

As stated above, ozone is a "secondary" pollutant, formed in the atmosphere by reactions between NO_X and ROG. These reactions are driven by sunlight and proceed at varying rates. Transport is the movement of ozone or the pollutants that form ozone from one area (known as the upwind area) to another area (known as the downwind area). Pollutant transport is a very complex phenomenon. Sometimes transport is a straightforward matter of wind blowing from one area to another at ground level, carrying ozone with it, but usually it is not that simple. Transport is three-dimensional; it can take place at the surface, or high above the ground. Meteorologists use the terms "surface" and "aloft" to distinguish these two cases. Often, winds can blow in different directions at different heights above the ground. To complicate matters further, winds can shift during the day, pushing a polluted air mass first one way,

then another. Finally, because ozone and ozone forming emissions from an upwind area can mix with locally generated ozone and locally generated emissions, it is often difficult to determine the origin of the emission causing high pollution levels. Political boundaries do not prevent transport of pollutants. Transport over distances of several hundred miles has often been documented in California.

Table 2 – National and State Ambient Air Quality Standards[3]

Air Pollutant	Averaging Time	California Standard	National Standard
Ozone (O_3)	1 hour 8 hour	0.09 ppm 0.070 ppm	— 0.075 ppm
Respirable particulate matter (PM_{10})	24 hour Mean	50 µg/m^3 20 µg/m^3	150 µg/m^3 —
Fine particulate matter ($PM_{2.5}$)	24 hour Mean	— 12 µg/m^3	35 µg/m^3 12.0 µg/m^3
Carbon monoxide (CO)	1 hour 8 hour	20 ppm 9.0 ppm	35 ppm 9 ppm
Nitrogen dioxide (NO_2)	1 hour 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 Rolling 3-month	1.5 µg/m^3 —	— 0.15 µg/m^3
Sulfates	24 hour	25 µg/m^3	**No Federal 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/m^3 = micrograms per cubic meter Mean = Annual Arithmetic Mean

The accurate determination of the impacts of transport requires detailed technical analyses in conjunction with modeling studies. The Imperial County Air Quality Management Plan[4] (AQMP) identifies how the transport of emissions and pollutants from Mexico and other areas (South Coast and San Diego) impact ozone violations within

[3] Ambient Air Quality Standards. California Air Resources Board. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf. Accessed June 2013.

[4] Final 2009 1997 8-Hour Modified Air Quality Management Plan. Imperial County Air Pollution Control District. July 13, 2010.

Imperial County. Although the Imperial County is currently in attainment of the 1997 8-hour ozone NAAQS, it is important to note that any future analysis of air emissions impacting Imperial County must take into consideration the influence of transport from three distinct sources, that of the South Coast Air Basin via the Coachella Valley to the north, the San Diego Air Basin to the west and the international city of Mexicali, Mexico to the south.

2.2.3 Toxic Air Contaminants

In addition to the above-listed criteria pollutants, toxic air contaminants (TACs) are another group of pollutants of concern. AB 1807[5] sets forth a procedure for the identification and control of TAC in California 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. There are almost 200 compounds that 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).

TACs do not have ambient air quality standards. 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.

Emissions from the top ten TACs in the SSAB are presented in Table 3. Similar to the criteria pollutants, TACs are emitted from stationary sources, area-wide sources, mobile sources, and natural sources.

Table 3 – 2009 TAC Emissions[6] in Salton Sea Air Basin (tons per year)

Toxic Air Contaminant	Imperial	Riverside (SSAB)	Total SSAB
Acetaldehyde	106	107	213
Benzene	159	85	244
1,3-Butadiene	38	20	58
Carbon Tetrachloride	0	<0.01	<0.01
Hexavalent Chromium	<0.01	<0.01	<0.01
para-Dichlorobenzene	7	17	24
Formaldehyde	260	232	492
Methylene Chloride	18	73	91
Perchloroethylene	23	56	79
Diesel particulate matter	379	624	1,003

2.2.4 Sensitive Receptors

Some members of the population are especially sensitive to air pollutant emissions and should be given special consideration when evaluating air quality impacts from projects. These people include children, the elderly, and persons with preexisting respiratory or cardiovascular illness, and athletes and others who engage in frequent

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

[6] California Almanac of Emissions and Air Quality - 2009 Edition. California Air Resources Board. http://www.arb.ca.gov/aqd/almanac/almanac09/chap509.htm. Page updated March 27, 2009.

exercise. Structures that house these persons or places where they gather are defined as sensitive receptors by ICAPCD.

Residential areas are considered sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods, resulting in sustained exposure to any pollutants present. Recreational land uses are considered moderately sensitive to air pollution. Exercise places a high demand on respiratory functions, which can be impaired by air pollution even though exposure periods during exercise are generally short. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

2.3. Greenhouse Gases

Constituent gases that trap heat in the Earth's atmosphere are called greenhouse gases (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[7]. 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 Effect", and have led to a trend of unnatural warming of the Earth's natural climate 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. Methane's warming potential of 21 indicates that methane has a 21 times greater warming affect than CO_2 on a molecular basis. 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).

Carbon Dioxide (CO_2) 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 coal, oil, natural gas, and wood. Since the industrial revolution began in the mid-1700s, each of these activities has increased in scale and distribution. Prior to the industrial revolution,

[7] Climate Action Team Report to Governor Schwarzenegger and the California Legislature. California Environmental Protection Agency, Climate Action Team. March 2006.

concentrations CO_2 were stable at a range of 275 to 285 ppm[8]. The National Oceanic and Atmospheric Administration (NOAA's) Earth System Research Laboratory (ESRL)[9] indicates that global concentration of CO_2 were 396.72 ppm in April 2013. In addition, the CO_2 levels at Mauna Loa[10] 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.

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.

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. Man-made 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.

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 un-reactive in the troposphere (the level of air at the Earth's surface). CFCs have no natural source but were first synthesized in 1928. It was used for refrigerants, aerosol propellants, and cleaning solvents. Because of the discovery that they are able to 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.

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

Perfluorocarbons (PFCs) have stable molecular structures and do not break down through the 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.

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

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8 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.

9 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.

10 ibid

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.

2.3.1 GHG Emission Levels

According to the World Resources Institute[11] (WRI) in 2005, total worldwide GHG emissions were estimated to be 37,797 million (M) t of CO_2e ($MtCO_2e$) and GHG emissions per capita worldwide was 5.9 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 2009, total GHG emissions in the U.S. were 6,469 $MtCO_2e$, with average GHG emissions per capita of 21.09 tCO_2e and total GHG emissions in California were 446.07 $MtCO_2e$, with average GHG emissions per capita of 12.07 tCO_2e.

California has a larger percentage of its total GHG emissions coming from the transportation sector (50%) than the U.S. emissions (29%) and a smaller percentage of its total GHG emissions from the electricity generation sector, i.e. California have 11 percent but the U.S. has 32 percent.

2.3.2 Potential Environmental Effects

Worldwide, average temperatures are likely to increase by 3 °F to 7 °F by the end of the 21st century[12]. 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's) Working Group II Report[13], 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.

2.3.3 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 California Natural Resources Agency[14] summarized the best known science on climate change impacts in seven specific sectors and provided recommendations on how to manage against those threats. Generally, research indicates that California should expect overall hotter and drier conditions with a continued reduction in winter snow (with concurrent increases in winter rains), as well as increased average temperatures, and accelerating sea-level rise. In addition to these changes, the intensity of extreme weather events is also changing. The impacts assessment indicates that extreme weather events, such as heat waves, wildfires, droughts, and floods are likely to be some of the earliest climate impacts experienced. It is anticipated that

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11 Climate Analysis Indicators Tool. International Dataset. World Resources Institute. http://www.wri.org/tools/cait/. Accessed June 2013.

12 Climate Change 2007: Impacts, Adaptation, and Vulnerability. Website http://www.ipcc.ch/ipccreports/ar4-wg2.htm. Accessed March 2013.

13 ibid

14 2009 California Climate Adaptation Strategy, A Report to the Governor of the State of California in Response to Executive Order S-13-2008. California Natural Resources Agency. December 2009.

temperatures in California could increase 5 °F by 2050 and 9 °F by 2100. Precipitation is expected to increase by 35 percent by 2050 and sea levels are expected to rise by 18 inches by 2050 and by 55 inches by 2100.

2.4. Baseline Conditions

2.4.1 Local Ambient Air Quality

Existing levels of ambient air concentrations and historical trends and projections in the project area are best documented by measurements made by the ICAPCD and CARB. Imperial County began its ambient air monitoring in 1976; however, monitoring of ozone began in 1986 at the El Centro monitoring station. Since that time, monitoring has been performed by the ICAPCD, CARB, and private industry. There are six monitoring sites in Imperial County from Niland to Calexico.

The nearest monitoring stations to the Project site are both approximately 7 miles from the IRIS Cluster site. In Calexico, there is a station called Calexico-Ethyl that is located at 1029 East Belcher Street and in El Centro is a station called El Centro-9th that is located at 150 9th Street. Both stations only monitor ozone, $PM_{2.5}$, PM_{10}, CO, and NO_2. The Calexico Station also monitors SO_2. Table 4 summarizes 2007 through 2012 published monitoring data from the CARB's Aerometric Data Analysis and Management System (ADAM) for the Calexico-Ethyl Station and Table 5 shows the data for the El Centro-9th Station.

The monitoring data shows that both stations demonstrated the general air quality problems of the Basin in that the Calexico-Ethyl and El Centro-9th Stations exceeded the State and federal ozone standards in all six years. Both Stations exceeded the State PM_{10} standards; however, the Calexico Station exceeded the federal PM_{10} three of the six years and the El Centro Station only exceeded two of the 6 years. Additionally, the Calexico exceeded the federal $PM_{2.5}$ standard every year and the El Centro Station only exceeded the standard in two of the six years. Neither station exceeded the State or federal CO standards and the State NO_2 standard but the Calexico Station exceeded the NO_2 federal standard in four of the six years and the El Centro Station only exceeded in three of the six years.

Table 4 – Ambient Air Quality Monitoring Summary for Calexico-Ethyl Station[15]

Air Pollutant	Monitoring Year					
Ozone	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Max 1 Hour (ppm)	**0.112**	**0.128**	**0.104**	**0.102**	**0.097**	**0.114**
Days > CAAQS (0.09 ppm)	10	8	5	4	2	11
Max 8 Hour (ppm)	**0.094**	**0.093**	**0.083**	**0.082**	**0.076**	**0.095**
Days > NAAQS (0.075 ppm)	9	7	4	2	3	12
Days > CAAQS (0.070 ppm)	20	17	9	6	5	26
Inhalable Particulate Matter (PM_{10})	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Max Daily California Measurement	**282.0**	**109.7**	**265.8**	**117.3**	**83.9**	**387.3**
Days > NAAQS (150 µg/m^3)	1	0	3	0	0	2
Days > CAAQS (50 µg/m^3)	36	31	34	9	16	36
Fine Particulate Matter ($PM_{2.5}$)	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Max Daily National Measurement	**66.7**	**37.1**	**45.0**	**50.9**	**80.3**	**119.3**
Days > NAAQS (35 µg/m^3)	3	1	4	2	2	4
Carbon Monoxide (CO)	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Max 8 Hour (ppm)	7.53	6.34	7.46	4.46	6.06	4.47
Days > NAAQS (9 ppm)	0	0	0	0	0	0
Days > CAAQS (9.0 ppm)	0	0	0	0	0	0
Nitrogen Dioxide (NO_2)	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Max Hourly (ppb)	**107**	**146**	**102**	80	**130**	91
Days > NAAQS (100 ppb)	1	3	1	0	2	0
Days > CAAQS (0.18 ppm)	0	0	0	0	0	0
Sulfur Dioxide (SO_2)	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Max 24 Hour (ppm)	0.004	0.007	0.004	0.004	N/A	N/A
Days > CAAQS (0.04 ppm)	0	0	0	0		

Abbreviations:

> = exceed ***Bold*** *= exceedance* *N/A = not available*
ppm = parts per million *ppb = parts per billion* *µg/m^3 = micrograms per cubic meter*
CAAQS = California Ambient Air Quality Standard *NAAQS = National Ambient Air Quality Standard*

[15] ADAM Air Quality Data Statistics. California Air Resources Board. http://www.arb.ca.gov/adam/welcome.html. Accessed February 2014.

Table 5 – Ambient Air Quality Monitoring Summary for El Centro-9th Station

Air Pollutant	Monitoring Year					
Ozone	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Max 1 Hour (ppm)	**0.118**	**0.135**	**0.111**	**0.122**	**0.103**	**0.111**
Days > CAAQS (0.09 ppm)	8	4	9	3	5	9
Max 8 Hour (ppm)	**0.094**	**0.084**	**0.085**	**0.082**	**0.084**	**0.091**
Days > NAAQS (0.075 ppm)	8	2	11	10	12	14
Days > CAAQS (0.070 ppm)	23	9	30	29	21	26
Inhalable Particulate Matter (PM_{10})	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Max Daily California Measurement	**196.0**	**88.7**	**233.7**	**70.2**	**80.3**	**72.1**
Days > NAAQS (150 µg/m^3)	1	0	2	0	0	0
Days > CAAQS (50 µg/m^3)	22	4	17	5	9	6
Fine Particulate Matter ($PM_{2.5}$)	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Max Daily National Measurement	30.5	26.7	**37.7**	19.9	**54.4**	26.4
Days > NAAQS (35 µg/m^3)	0	0	1	0	2	0
Carbon Monoxide (CO)	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Max 8 Hour (ppm)	1.67	1.71	3.20	5.61	9.01	3.64
Days > NAAQS (9 ppm)	0	0	0	0	0	0
Days > CAAQS (9.0 ppm)	0	0	0	0	0	0
Nitrogen Dioxide (NO_2)	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Max Hourly (ppb)	71.0	81.0	**121.6**	**140.5**	**117.4**	72.0
Days > NAAQS (100 ppb)	0	0	1	1	1	0
Days > CAAQS (0.18 ppm)	0	0	0	0	0	0

Abbreviations:

> = exceed ***Bold*** *= exceedance* *N/A = not available*
ppm = parts per million *ppb = parts per billion* *µg/m^3 = micrograms per cubic meter*
CAAQS = California Ambient Air Quality Standard *NAAQS = National Ambient Air Quality Standard*

2.4.2 Local Emissions Inventory

An emissions inventory is an account of the amount of air pollution generated by various emissions sources in a specified area. To estimate the sources and quantities of pollution, CARB, in cooperation with local air districts, other government agencies, and industry, maintains an inventory of California emission sources. Sources are subdivided into four major emission categories: mobile, stationary, area-wide, and natural sources.

Mobile sources include on-road sources and off-road mobile sources. The on-road emissions inventory, which includes automobiles, motorcycles, and trucks, is based on an estimation of population, activity, and emissions of the on-road motor vehicles used in California. The off-road emissions inventory is based on an estimate of the population, activity, and emissions of various off-road equipment, including recreational vehicles, farm and construction equipment, lawn and garden equipment, forklifts, locomotives, commercial marine ships, and marine pleasure craft.

Stationary sources are large, fixed sources of air pollution, such as power plants, refineries, and manufacturing facilities. Stationary sources also include aggregated point sources. These include many small point sources, or facilities, that are not inventoried individually but are estimated as a group and reported as a single-source category. Examples include gas stations and dry cleaners. Each of the local air districts estimates the emissions for the majority of stationary sources within its jurisdiction.

Areawide sources include source categories associated with human activity that take place over a wide geographic area. Emissions from area-wide sources may be either from small, individual sources, such as residential fireplaces, or from widely distributed sources that cannot be tied to a single location, such as consumer products, and dust from unpaved roads or farming operations (such as tilling).

Natural, or non-anthropogenic, sources include source categories with naturally occurring emissions such as geogenic (e.g., petroleum seeps), wildfires, and biogenic emissions from plants.

2.4.2.1 Imperial County Emissions Inventory

Table 6 summarizes Imperial County's estimated 2015 projected emissions inventory (EI) for major categories of air pollutants presented in tons per day. Detailed breakdowns of the emissions sources and categories are available at CARB's website[16].

2.4.2.2 2015 Imperial County Projected Emission Inventory Summary

Reactive organic gases (ROG)

ROG emissions result primarily from incomplete fuel combustion and the evaporation of chemical solvents and fuels. In 2015, Imperial County is projected to have 30 percent of the ROG emissions contributed by miscellaneous processes, primarily farming operations; approximately 22 percent will be contributed by solvent evaporation, such as pesticides and fertilizers and asphalt paving and roofing; 22 percent came from other mobile sources, primarily off-road recreational vehicles; and 13 percent came from on-road vehicles, predominantly light-duty cars and trucks.

Carbon monoxide (CO)

The primary source of CO in Imperial County in 2015 is projected to be from on-road motor vehicles, which will contribute 44 percent of the total CO. Other off-road engines and vehicles (such as off-road recreational vehicles and recreational boats, construction equipment, and aircraft) will contribute another 36 percent. Higher levels of CO generally occur in areas with heavy traffic congestion.

Nitrogen Oxides (NO_X)

A review of the projected 2015 EI shows that over 71 percent of the total NO_X emissions in Imperial County is projected to come from on- and off-road vehicles (45.4% from on-road and 25.5% from off-road). The largest portion of on-road NO_X emissions come from heavy-duty diesel trucks (71.7% of the total for on-road). The largest contributors from off-road sources are trains (56.2% of total off-road NO_X).

Inhalable Particulate Matter (PM_{10})

Almost 98 percent of the total PM_{10} emissions in Imperial County is projected to come from the category labeled Miscellaneous Processes in 2015. The largest portion of the PM_{10} emissions from miscellaneous processes comes from fugitive windblown dust (75% of the total for miscellaneous processes) and unpaved road dust (16%).

However, as part of ICAPCD's PM_{10} State Implementation Plan (SIP)[17], analysis of the potential sources of fugitive windblown shows that during high winds, Imperial County's desert areas can produce PM emissions over 50 times greater than the emissions from any anthropogenic source, including agricultural cropland. In addition, Imperial

[16] Almanac Emissions Projection Data. California Air Resources Board. http://www.arb.ca.gov/app/emsinv/. Accessed February 2014.

[17] 2009 Imperial County State Implementation Plan for Particulate Matter Less Than 10 Microns in Aerodynamic Diameter - Draft Final. Imperial County Air Pollution Control District. July 10, 2009.

County is bordered to the south by the densely populated city of Mexicali, Mexico. Mexicali comprises approximately 760,000 people within approximately 200 square miles, and has PM emissions estimated at 257 tons/day, compared with emissions of approximately 13 tons/day for the considerably smaller US town of Calexico situated just across the Mexican border from Mexicali. Under stagnant and light wind conditions, elevated dust concentrations in Mexicali can cause PM from Mexico to drift across the border into Calexico. As a result of Imperial County's desert climate and of its shared border with the densely populated city of Mexicali, the primary reasons for elevated PM levels in Imperial County are thus (i) disturbance of soils by wind and human activity, (ii) transport of PM_{10} from Mexico, and occasionally, (iii) wildfires.

Table 6 – Imperial County 2015 Estimated Annual Emissions

Emission Category	2015 Emissions in tons per day				
Stationary Sources	**ROG**	**CO**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Fuel combustion	0.20	1.08	8.25	0.56	0.47
Waste disposal	0.02	0	0	0	0
Cleaning and surface coatings	0.42	0	0	0	0
Petroleum production and marketing	0.76	0	0	0	0
Industrial processes	0.08	0.06	0.03	3.30	1.04
Areawide Sources	**ROG**	**CO**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Solvent evaporation	7.10	0	0	0	0
Miscellaneous processes	9.88	14.65	0.66	230.18	36.62
Mobile Sources	**ROG**	**CO**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
On-road motor vehicles	4.17	34.65	13.96	0.65	0.49
Other mobile sources	7.05	27.73	7.83	0.91	0.84
Natural Sources	**ROG**	**CO**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Biogenic Sources	3.05	0	0	0	0
GRAND TOTAL	***32.7***	***78.2***	***30.7***	***235.6***	***39.5***

Notes:

All values in tons per day. Forecasted 2015 emissions are estimated from a base year inventory for 2002 and based on growth and control factors available from CARB. The sum of values may not equal total shown, due to rounding.

Fine Particulate Matter ($PM_{2.5}$)

Whereas a significant portion of PM_{10} emissions come from dislocation processes, $PM_{2.5}$ is smaller and is more often a result of particulates coming from combustion sources. However in Imperial County Miscellaneous Processes will still represent 93 percent of the total $PM_{2.5}$, with fugitive windblown dust contributing approximately 73 percent of the miscellaneous processes total.

SECTION 3.0 – REGULATORY CONTEXT

Air pollutants are regulated at the national, State, and air basin level; each agency has a different degree of control. The EPA regulates at the national level; the CARB regulates at the State level; and the ICAPCD regulates at the air basin level in the Project area.

3.1. Regulatory Agencies

3.1.1 Environmental Protection Agency (EPA)

EPA is the federal agency responsible for overseeing state air programs as they relate to the FCAA, approving 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 (CARB)

CARB 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. CARB 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 the EPA. CARB 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 Codes Section 39606(a)(2) gave the CARB the responsibility to "based upon similar meteorological and geographic conditions and consideration for political boundary lines whenever practicable, divide the State into air basins to fulfill the purposes of this division". Imperial County is located within the Salton Sea Air Basin.

3.1.3 Imperial County Air Pollution Control District (ICAPCD)

The ICAPCD shares responsibility with CARB for ensuring that all State and federal ambient air quality standards are achieved and maintained within the County. State law assigns to local air pollution control districts the primary responsibility for control of air pollution from stationary sources, while reserving an oversight role for CARB. Generally, the air pollution control districts must meet minimum State and EPA program requirements. The air pollution control district is also responsible for the inspection of stationary sources, monitoring of ambient air quality, and planning activities such as modeling and maintenance of the emission inventory. Air pollution control districts in State nonattainment areas are also responsible for developing and implementing transportation control measures necessary to achieve the state ambient air quality. In regards to the SIP, air pollution control districts will implement the following activities:

1. Development of emission inventories, modeling process, trend analysis and quantification and comparison of emission reduction strategies;
2. Necessary information on all Federal and State adopted emission reduction measures which affect the area;
3. Review of emissions inventory, modeling, and self-evaluation work;
4. Technical and strategic assistance, as appropriate, in the selection and implementation of emission reduction strategies;
5. Technical and planning assistance in developing and implementing processes to address the impact of emissions growth beyond the attainment date;

6. Maintenance of monitors and reporting and analysis of monitoring data;
7. Support for public education efforts by providing information to the community for means of outreach;
8. Coordinate communication between local areas and EPA to facilitate continuing EPA review of local work;
9. Expeditious review of the locally developed plan, and if deemed adequate, propose modification of the AQMP to adopt the early progress plan;
10. Adoption of emission reduction strategies into the AQMP as expeditiously as possible.

3.2. Attainment Status

3.2.1 Designations/Classifications

EPA has identified nonattainment and attainment areas for each NAAQS. Under amendments to the FCAA, EPA has designated air basins or portions thereof as attainment, nonattainment, or unclassifiable, based on whether or not the national standards have been achieved. The State designates air basins or portions thereof for all CAAQS. The State designation criteria specify four categories: nonattainment, nonattainment-transitional, attainment, and unclassified.

In addition, the FCAA uses a classification system to design clean-up requirements appropriate for the severity of the pollution and set realistic deadlines for reaching clean-up goals. If an air basin is not in federal attainment 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 7 shows the federal and State attainment designations and federal classifications for the Basin.

3.2.2 Federal Clean Air Act Requirements

The FCAA requires plans to provide for the implementation of all reasonably available control measures including the adoption of reasonably available control technology for reducing emissions from existing sources. The FCAA encourages market-based approaches to emission control innovations.

On April 30, 2004, Imperial County was classified as a "Marginal" nonattainment area for 8-Hour Ozone NAAQS under the FCAA. On March 13, 2008, the EPA found that Imperial County failed to meet attainment for the 8-Hour Ozone NAAQS by June 15, 2007 and was reclassified as "Moderate" nonattainment. However, on November 17, 2009, EPA announced that Imperial County has met the 1997 federal 8-hour ozone standard—demonstrating improved air quality in the area. The announcement is based on three years of certified clean air monitoring data for the years 2006-2008. Table 7 shows the designations and classifications for the Basin.

In response to the opinion of the *US Court of Appeals for the Ninth Circuit in Sierra Club v. United States Environmental Protection Agency, et al*., in August 2004 the EPA found that the Imperial Valley PM_{10} nonattainment area had failed to attain by the moderate area attainment date of December 31, 1994, and as a result reclassified under the FCAA the Imperial Valley from a moderate to a serious PM_{10} nonattainment area. Also in August 2004, the EPA proposed a rule to find that the Imperial area had failed to attain the annual and 24-hour PM_{10} standards by the serious area deadline of December 31, 2001. The EPA finalized the rule on December 11, 2007, citing as the basis for the rule that six Imperial County monitoring stations were in violation of the 24-hour standard during 1999-2001. The EPA's final rule action requires the State to submit to the EPA by December 11, 2008 (within one year of the rule's publication in the Federal Register) an air quality plan that demonstrates that the County will attain the PM_{10} standard as expeditiously as practicable.

Table 7 – Designations/Classifications for the Basin[18]

Pollutant	State Designation	Federal Designation (Classification)
Ozone	Nonattainment	Attainment
Respirable PM (PM_{10})	Nonattainment	Nonattainment (Serious) *
Fine PM ($PM_{2.5}$)	Attainment***	Nonattainment **
Carbon Monoxide (CO)	Attainment	Unclassifiable/Attainment
Nitrogen Dioxide (NO_2)	Attainment	Unclassifiable/Attainment
Sulfur Dioxide	Attainment	Attainment
Sulfates	Attainment	**No Federal Standard**
Lead	Attainment	
Hydrogen Sulfide	Unclassified	
Visibility reducing Particles	Unclassified	

* *Designation for Imperial Valley Planning Area only, which is most of Imperial County save for a small stretch of land on the County's eastern end.*

** *Designation is only for the urban areas within Imperial County*

*** *Designation for the whole of Imperial County except the City of Calexico.*

On November 13, 2009, EPA published Air Quality Designations for the 2006 24-Hour Fine Particle ($PM_{2.5}$) National Ambient Air Quality Standards[19] wherein Imperial County was listed as designated nonattainment for the 2006 24-hour $PM_{2.5}$ NAAQS. However, the nonattainment designation for Imperial County is only for the urban area within the County[20] and it has been determined that the Proposed Project is located outside of the nonattainment boundaries for $PM_{2.5}$. On April 10, 2014, CARB Board gave final approval to the 2013 Amendments to Area Designations for CAAQSs. For the State $PM_{2.5}$ standard, effective July 1, 2014, the City of Calexico will be designated nonattainment, while the rest of the SSAB will be designated attainment.

3.3. Regulatory Framework

This section contains a discussion of the federal, State, and local air quality regulations, plans, and policies applicable to the proposed landfill plan. Federal, state, and local authorities have adopted rules and regulations that govern the emissions of air pollutants from any facility. The local and federal authorities each have specific criteria for the evaluation of a source and its emissions and the authority to issue permit conditions and specify recordkeeping and reporting requirements that must be met in order to operate a source of air pollutants. This section focuses on current air quality regulations and their impact on the currently permitted landfill and on the proposed landfill plan.

3.3.1 Federal Regulations and Standards

The FCAA was enacted in 1970 and last amended in 1990 (42 USC 7401, et seq.) with the purpose of controlling air pollution and providing a framework for national, state, and local air pollution control efforts. Basic components of the FCAA and its amendments include NAAQS for major air pollutants, hazardous air pollutants standards, SIP

18 Area Designations and Maps – 2013. California Air Resources Board. April 10, 2014.

19 Air Quality Designations for the 2006 24-Hour Fine Particle ($PM_{2.5}$) National Ambient Air Quality Standards. United States Environmental Protection Agency. Federal Register. Vol. 74, No. 218. November 13, 2009.

20 Final 2009 1997 8-Hour Modified Air Quality Management Plan. Imperial County Air Pollution Control District. July 13, 2010.

requirements, motor vehicle emissions standards, and enforcement provisions. The FCAA was enacted for the purposes of protecting and enhancing the quality of the nation's air resources to benefit public health, welfare, and productivity.

3.3.2 State Regulations and Standards

The CARB is responsible for responding to the FCAA, regulating emissions from motor vehicles and consumer products, and implementing the CCAA. The CCAA outlines a program to attain the CAAQSs for ozone, sulfur dioxide, and CO by the earliest practical date. Since CAAQSs are more stringent than NAAQSs in most cases, attainment of the CAAQS will require more emissions reductions than what would be required to show attainment of the NAAQS. Similar to the federal system, the state requirements and compliance dates are based upon the severity of the ambient air quality standard violation within a region.

3.3.3 Local Regulations and Standards

The ICAPCD also has the authority to adopt and enforce regulations dealing with controls for specific types of sources, emissions of hazardous air pollutants, and New Source Review. The ICAPCD Rules and Regulations are part of the SIP and are separately enforceable by the EPA. The following ICAPCD rules potentially apply to the proposed project:

- **Rules 800** (General Requirements for Control of Fine Particulate Matter), **801** (Construction and Earthmoving Activities), **802** (Bulk Materials, **803** (Carry-out and Track-out), **804** (Open Areas), and **805** (Paved and Unpaved Roads) are intended to reduce the amount of PM_{10} entrained in the ambient air as a result of emissions generated by anthropogenic fugitive dust sources by requiring actions to prevent, reduce, or mitigate PM_{10} emissions. These rules include opacity limits, control measure requirements, and dust control plan requirements that apply to activities at the Facility.

3.3.4 Air Quality Management Plans (AQMP)

3.3.4.1 Ozone Plan

On December 3, 2009, the EPA issued a final ruling determining that the Imperial County "moderate" 8-hour ozone non-attainment area attained the 1997 8-hour NAAQS for ozone. The determination by EPA was based upon complete, quality-assured, and certified ambient air monitoring data for the years 2006 thru 2008. This determination effectively suspended the requirement for the state to submit an attainment demonstration, a RFP plan, contingency measures and other planning requirements for so long as Imperial County continues to attain the 1997 8-hour ozone NAAQS. However, this determination did not constitute a re-designation to attainment; therefore, the classification and designation status for Imperial County remain as a "moderate" non-attainment area of the 1997 8-hour ozone NAAQS. As such, Imperial County was required to submit for EPA approval a 2009 8-Hour Ozone "Modified" Air Quality Management Plan (Modified AQMP), which was approved July 13, 2010.

The Modified AQMP serves as a comprehensive planning document intended to provide guidance to the ICAPCD, the County, and other local agencies on how to continue maintaining the 1997 8-hour ozone NAAQS. The Modified AQMP includes control measures consisting of three components: 1) the ICAPCD's Stationary Source Control Measures; 2) Regional Transportation Control Measures; and 3) the State Strategy. These measures primarily rely on the traditional command and control approach and as such provide the framework for ICAPCD rules that reduce ROG and NO_X emissions.

3.3.4.2 PM_{10} Plan

The ICAPCD District Board of Directors adopted the PM_{10} State Implementation Plan (SIP) for Imperial County on

August 11, 2009[21]. The PM_{10} SIP meets EPA requirements to demonstrate that the County will attain the PM_{10} standard as expeditiously as practicable. The PM_{10} SIP was required to address and meet the following elements, required under the FCAA of areas classified to be in serious nonattainment of the NAAQS:

- Best available emission inventories;
- A plan that enables attainment of the PM_{10} federal air quality standards;
- Annual reductions in PM_{10} or PM_{10} precursor emissions that are of not less than 5 percent from the date of SIP submission until attainment;
- Best available control measures and best available control technologies for significant sources and major stationary sources of PM_{10}, to be implemented no later than 4 years after reclassification of the area as serious;
- Transportation conformity and motor vehicle emission budgets in accord with the attainment plan;
- Reasonable further progress and quantitative milestones; and
- Contingency measures to be implemented (without the need for additional rulemaking actions) in the event that the control measure regulations incorporated in the plan cannot be successfully implemented or fail to give the expected emission reductions.

The PM_{10} SIP updated the emission inventory to incorporate revised cattle emissions, revised windblown dust model results, revised South Coast Association of Governments activity data, and updated entrained and windblown unpaved road dust estimates. The adjustments made to the emission inventory fell in two categories: (i) adjustments to incorporate new methodology and updated information (e.g., throughputs, activity data, etc.), and (ii) adjustments to incorporate emission reductions arising from the implementation of new control measures.

Additionally, the PM_{10} SIP demonstrates that Imperial County attained the Federal PM_{10} NAAQS, but-for international emissions from Mexico, based on 2006-2008 monitoring data. Attainment was due, in part, to ICAPCD's November 2005 adoption and subsequent implementation of Regulation VIII fugitive dust rules; those rules were based on the related 2005 Best Available Control Measure (BACM) analysis.

Since the reclassification of Imperial County to serious nonattainment for PM_{10} occurred on August 2004 and control of fugitive PM_{10} emissions from the significant source categories that meets BACM stringency identified in the PM_{10} SIP began in January 2006.

Major stationary sources are required to implement Best Available Control Technology (BACT) to control PM_{10} emissions (Rule 207) and they are required to comply with the 20 percent opacity (Rule 403). In addition stationary sources will be required to mitigate fugitive dust emissions from access roads, construction activities, handling and transferring of bulk materials, and track-out/carry-out according to the requirements of Regulation VIII.

Because the Imperial County is shown in the PM_{10} SIP to have attained the 24-hour PM_{10} NAAQS but-for international transport of Mexicali emissions in 2006-2008, reasonable further progress and milestone requirements are unnecessary, and specifically the 5% yearly emission reductions requirement does not apply to future years. As documented in the PM_{10} SIP, all remaining SIP requirements applicable to the 2009 Imperial County PM_{10} Plan have been successfully addressed.

[21] 2009 Imperial County State Implementation Plan for Particulate Matter Less Than 10 Microns in Aerodynamic Diameter. Imperial County Air Pollution Control District. July 10, 2009.

3.4. Climate Change

3.4.1 Federal Climate Change Legislation

The federal government is taking a number of common-sense steps to address the challenge of climate change. EPA collects various types of GHG emissions data. This data helps policy makers, businesses, and EPA track GHG emissions trends and identify opportunities for reducing emissions and increasing efficiency. EPA 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.

EPA 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.

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 percent below 1990 levels.

To meet these targets, the Climate Action Team prepared a report to the Governor in 2006 that contains recommendations and strategies to help ensure 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 CARB 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 CARB 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 CARB 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[22] released by CARB in 2008outlined the state's strategy to achieve the AB-32 goals. This Scoping Plan, developed by CARB in coordination with the Climate Action Team (CAT), proposed a comprehensive set of

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

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 CARB 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 August 2011, the Scoping Plan was re-approved by the Board and includes the Final Supplement to the Scoping Plan Functional Equivalent Document[23]. This document includes expanded analysis of project alternatives as well as updates the 2020 emission projections in light of the current economic forecasts. Considering the updated 2020 BAU estimate of 507 $MtCO_2e$, only a 16 percent reduction below the estimated new BAU levels would be necessary to return to 1990 levels by 2020. The 2011 Scoping Plan expands the list of nine Early Action Measures into a list of 39 Recommended Actions contained in Appendices C and E of the Plan. These measures are presented in Table 8.

3.4.2.4 Renewables Portfolio Standard (Scoping Action E-3)

The California Energy Commission estimates that about 12 percent of California's retail electric load is currently met with renewable resources. Renewable energy includes (but is not limited to) wind, solar, geothermal, small hydroelectric, biomass, anaerobic digestion, and landfill gas. California's current Renewables Portfolio Standard (RPS) is intended to increase that share to 20 percent by 2010. Increased use of renewables will decrease California's reliance on fossil fuels, thus reducing emissions of GHGs from the electricity sector. Based on the Governor's call for a Statewide 33 percent RPS, the Scoping Plan anticipates that California will have 33 percent of its electricity provided by renewable resources by 2020, and includes this reduction in GHG emissions. The RPS was established in 2002 under Senate Bill 1078, accelerated in 2006 under Senate Bill 107, and expanded in 2011 under Senate Bill 2.

3.4.2.5 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 percent of the GHG emissions in California, with automobiles and light trucks alone contributing almost 30 percent. 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 does the following: (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.

[23] Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document. California Air Resources Board. August 19, 2011.

Table 8 – Recommended Actions of Climate Change Scoping Plan by Sector

ID #	Strategy Name
Transportation	
T-1	Pavley I and II – Light-Duty Vehicle GHG Standards
*T-2	Low Carbon Fuel Standard
T-3	Regional Transportation-Related GHG Targets
T-4	Vehicle Efficiency Measures
*T-5	Ship Electrification at Ports
T-6	Goods Movement Efficiency Measures
*T-7	Heavy Duty Vehicle GHG Emission Reduction Measure – Aerodynamic Efficiency
T-8	Medium/Heavy-Duty Vehicle Hybridization
T-9	High Speed Rail
Electricity and Natural Gas	
E-1	Energy Efficiency - Reduced Demand of 32,000 Gigawatt-hours (GWh)
E-2	Increase Combined Heat and Power Use by 30,000 GWh
E-3	Renewables Portfolio Standard
E-4	Million Solar Roofs
CR-1	Energy Efficiency - Commercial and Residential
CR-2	Solar Water Heating
Green Buildings	
GB-1	Green Buildings
Water	
W-1	Water Use Efficiency
W-2	Water Recycling
W-3	Water System Energy Efficiency
W-4	Reuse Urban Runoff
W-5	Increase Renewable Energy Production
W-6	Public Goods Charge
Industry	
I-1	Energy Efficiency and Co-Benefits Audits for Large Industrial Sources
I-2	Oil and Gas Extraction GHG Emission Reduction
I-3	GHG Leak Reduction from Oil and Gas Transmission
I-4	Refinery Flare Recovery Process Improvements
I-5	Removal of Methane Exemption from Existing Refinery Regulations

ID #	Strategy Name
Recycling and Waste Management	
*RW-1	Landfill Methane Control
RW-2	Additional Reductions in Landfill Methane – Capture Improvements
RW-3	High Recycling/Zero Waste
Forestry	
F-1	Sustainable Forest Target
High Global Warming Potential Gases	
*H-1	Motor Vehicle Air Conditioning Systems
*H-2	SF_6 Limits in Non-Utility and Non-Semiconductor Applications
*H-3	Reduction in Perfluorocarbons in Semiconductor Manufacturing
*H-4	Limit High GWP Use in Consumer Products
H-5	High GWP Reductions from Mobile Sources
H-6	High GWP Reductions from Stationary Sources
H-7	Mitigation Fee on GWP Gases
Agriculture	
A-1	Methane Capture at Large Dairies

Notes:

* = Discrete Early Actions – actions taken by CARB to reduce GHGs while also preparing the Scoping Plan

SECTION 4.0 – SIGNIFICANCE CRITERIA

The ICAPCD CEQA Air Quality Handbook[24] outlines significance determination thresholds. The significance criteria described in this section have been derived from this guidance document. In addition, significance criteria for stationary sources, which are permitted by the ICAPCD, are also cited in this section of the document.

4.1. CEQA Significance Determination Thresholds

As stated in the ICAPCD CEQA Air Quality Handbook and in the State CEQA Guidelines, a project is deemed to have a "potentially significant impact" on air quality if it could:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute to an existing or projected air quality violation;
- Result in cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- Expose the public (especially schools, day care centers, hospitals, retirement homes convalescence facilities, and residences) to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people. Each of these threshold criteria is discussed in this section.

4.2. ICAPCD Regional Thresholds of Significance

Under CEQA, each public agency is encouraged to develop and publish thresholds of significance. These thresholds of significance should be an identifiable quantitative, qualitative, or performance level of a particular environmental effect; the noncompliance with would mean the effect would normally be significant while compliance with would mean the effect would normally be less than significant.

4.2.1 Operational Thresholds

The ICAPCD has determined in their Guidelines that, because the operational phase of a proposed project has the potential of creating lasting or long term impacts on air quality, it is important that a proposed development evaluate the potential impacts carefully. Therefore, air quality analyses should compare all operational emissions of a project, including motor vehicle, area source, and stationary or point sources to the thresholds in Table 9 below. Table 9 provides general guidelines for determining the significance of impacts and the recommended type of environmental analysis required based on the total emissions that are expected from the operational phase of a project.

4.2.1.1 Tier I

From the ICAPCD's perspective, residential, commercial, and industrial developments with a potential to emit below the Tier I level will not be required to develop a Comprehensive Air Quality Analysis Report or an Environmental Impact Report. However, an Initial Study would be required to help the Lead Agency determine whether the project would have a less than significant impact. The Lead Agency is required by CEQA to disclose the identified environmental effects and the ways in which the environmental effects will be mitigated to achieve a level of less than significant. To achieve a level of insignificance the Lead Agency should require the

[24] CEQA Air Quality Handbook: Guidelines for the Implementation of the California Air Quality Act of 1970, and amended. Imperial County Air Pollution Control District, November 2007.

implementation of all feasible standard mitigation measures listed in Section 7.2 in the ICAPCD Guidelines. It is important to note that the measures identified in Section 7.2 do not represent a comprehensive list of all mitigation measures. Alternative mitigation measures may be proposed by the project proponent, the Lead Agency or the ICAPCD. The ICAPCD requires that alternative mitigation measures be fully documented with a copy of the documentation attached to the Initial Study. In addition, for some residential and commercial development projects, the developer may be required to implement off-site mitigation measures in order to reduce the air quality impacts further.

Table 9 – Regional Operational Thresholds of Significance[25]

Pollutant	Emissions in lbs/day	
	Tier I	Tier II
NO_X and ROG	Less than 55 lbs/day	55 lbs/day and greater
PM_{10} and SO_X	Less than 150 lbs/day	150 lbs/day and greater
CO	Less than 550 lbs/day	550 lbs/day and greater
Level of Significance	Less Than Significant	Significant Impact

4.2.1.2 Tier II

Any proposed residential, commercial, or industrial development with a potential to meet or exceed Tier II Levels is considered to have a significant impact on regional and local air quality and, therefore required to implement all standard mitigation measures as well as all feasible discretionary mitigation measures. These measures must be listed and incorporated into the environmental document which is prepared by the Lead Agency. Typically, Tier II projects are required, by the Lead Agency, to prepare an Environmental Impact Report (EIR) however, should a Lead Agency exempt a project from the development of an EIR the ICAPCD requires, at a minimum, a Comprehensive Air Quality Analysis Report (CAQAR). A properly developed CAQAR will identify the significant air quality impacts and the required mitigation measures associated with the project. A menu of standard and discretionary mitigation measures is listed in Sections 7.2 and 7.3. These mitigation measures serve to provide the project proponent with feasible measures to help reduce the air quality impacts identified in the CAQAR. In addition, residential, commercial, and industrial development projects may be required to implement off-site mitigation measures in order to further reduce the air quality impacts. All residential, commercial, and industrial projects are required to abide by off-site mitigation requirements under Section 7.4 of the ICAPCD Guidelines.

4.2.2 Construction Thresholds

Even though construction emissions are generally temporary in nature, they can have an adverse impact on air quality. Construction, by its very nature may produce a variety of emissions; however, PM_{10} is the pollutant of greatest concern. While construction PM_{10} emissions can vary greatly depending on the phase of the construction, level of activity, and other factors, ICPACD states there are feasible mitigation or control measures which can be reasonably implemented to reduce PM_{10} emissions significantly. Because particulate emissions from construction activities have the potential of leading to adverse health effects as well as nuisance concerns, such as reduced visibility, all projects are required to mitigate construction fugitive dust impacts by regulation, i.e. ICAPCD Regulation VIII. Another source of construction-related emissions comes from the use of diesel powered construction equipment which have been known to produce ozone precursor emissions and combustion related particulate emissions. To help projects address these emissions The ICAPCD has also listed standard mitigation

[25] *ibid*

measures for construction equipment in their Guidelines.

The ICAPCD suggests that the approach of the CEQA analyses for construction PM_{10} impacts should be qualitative as opposed to quantitative. While a Lead Agency may elect to quantify construction emissions, the ICAPCD recommends the implementation of effective and comprehensive mitigation measures. Standard Mitigation Measures for construction equipment and fugitive PM_{10} must be implemented at all construction sites. However, Table 10 shows construction thresholds ICAPCD provides to serve as a guide for project developers and interested parties in determining the recommended type of mitigation measures.

Table 10 – Construction Threshold Guide[26]

Pollutant	Threshold in lbs/day
PM_{10}	150
ROG	75
NO_X	100
CO	550

For those projects which fall below the threshold for construction, adherence to the most current rules adopted for the control of fugitive dust is mandatory. In addition, the ICAPCD requires the use of the Standard Mitigation Measures for construction equipment and fugitive dust found under the Guidelines.

Projects which are greater than the threshold for construction may have a significant impact on local and, under certain circumstances, regional air quality. These projects must conduct a construction analysis that appropriately reflects the identified potential construction air quality impacts. In addition, the quantification of construction emissions should be utilized to help define the need for a Health Risk Assessment (HRA). Projects that are prone to a significant use of heavy-duty diesel equipment and that are within areas prone to human exposure will be required to perform a diesel exhaust screening level. Factors considered by the ICAPCD staff when determining if a screening risk analysis is necessary include the expected emissions from diesel equipment, the location of the project and the distance to sensitive receptors.

Standard mitigation measures listed in the Guidelines for construction equipment and fugitive PM_{10} control should be implemented at all sites. In addition, all discretionary mitigation measures listed in the guidelines should be implemented at construction sites greater than 4 acres in size.

4.2.3 Toxics or Hazardous Air Pollutant Thresholds

The ICAPCD has also determined that project impacts may also be considered significant if the project which has the potential to emit toxic or hazardous air pollutants and are located in close proximity to sensitive receptors. These projects may be required to prepare an HRA to determine the potential level of risk associated with the operation.

4.2.4 Odor Threshold

While offensive odors rarely cause any physical harm, they still 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 to objectionable odors frequently would be deemed to have a significant impact.

[26] *ibid*

4.3. Greenhouse Gas (GHG) / Climate Change

4.3.1 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.

4.3.2 Local 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 or not they would result in a cumulatively significant impact on global climate change.

This analysis proposes the use of the "Tier 3" quantitative thresholds for residential and commercial projects as recommended by the South Coast Air Quality Management District (SCAQMD)[27]. The SCAQMD proposes that if a project generates GHG emissions below 3,000 tCO_2e, it could be concluded that the project's GHG contribution is not "cumulatively considerable" and is therefore less than significant under CEQA. If the project generates GHG emissions above the threshold, the analysis must identify mitigation measures to reduce GHG emissions.

[27] Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold. South Coast Air Quality Management District. October 2008.

SECTION 5.0 – IMPACT ANALYSIS

5.1. Analysis Methodology

Regional and local emissions of criteria air pollutants and precursors, and GHGs during project construction and operations were assessed in accordance with the methodologies described below. ICAPCD suggests that the "approach of the CEQA analyses for construction PM_{10} impacts should be qualitative as opposed to quantitative"[28] but that any projects which are greater than the level of significance for construction may have a significant impact on local and, under certain circumstances, regional air quality. Due to the size and visibility of the Proposed Project, this AQR has decided to include PM_{10} in the quantification.

It was determined that emissions from the construction activities related to the Proposed Project could not be easily estimated using existing models, including URBEMIS2007 and CalEEMod. Therefore, this analysis attempts to provide detailed analysis of impacts related to grading activities, solar panel installation activities, construction of both the O&M facilities and the substations, construction of offsite transmission facilities, and activities related to paving of parking areas for the buildings.

This AQR presents the emissions information separately for each of the four solar projects (ISF, RSF, FSF, and LSF) as well as for the combined IRIS Cluster. In combining the projects to estimate the effects of all four together, individual construction phases were staggered.

5.1.1 Construction Emissions

Construction of the Proposed Project would result in temporary emissions of ROG, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$. 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.

Construction for the IRIS Cluster is expected to conservatively last 12 months and each separate site would be divided into five potentially overlapping broad phase activities: 1) Grading/Earthwork; 2) Solar Panel Installation; 3) O&M Building Construction; 4) Offsite Transmission Facilities; and 5) Paving. No single solar site is projected to take the entire 12 months. Presented in Table 11 are the activity phase durations per solar site that were used in the estimation of emissions. In order to distribute potential impacts, the start dates of the individual solar projects will be staggered, or phased. The proposed phase activity distributions per solar site are presented in Figure 2.

Table 11 – Project Phase Durations

Activity Phase/Solar Site	Duration (months)			
	ISF	RSF	FSF	LSF
Phase 1 - Grading/Roads/Earthwork	1.0	0.8	0.8	0.6
Phase 2 - Solar Panel Construction	5.3	4.9	4.2	3.2
Phase 3 - Substation & O&M Building Construction	2.0	2.0	2.0	1.5
Phase 4 - Offsite Transmission Facilities	1.0	1.0	1.0	1.0
Phase 5 - Paving	0.5	0.4	0.4	0.3
Solar Site Project Duration	**7.0**	**6.8**	**5.8**	**5.0**

Note: the sum of the individual activity phase durations do not add up to the overall project duration due to activity phase overlap.

[28] CEQA Air Quality Handbook: Guidelines for the Implementation of the California Air Quality Act of 1970, and amended. Imperial County Air Pollution Control District, November 2007.

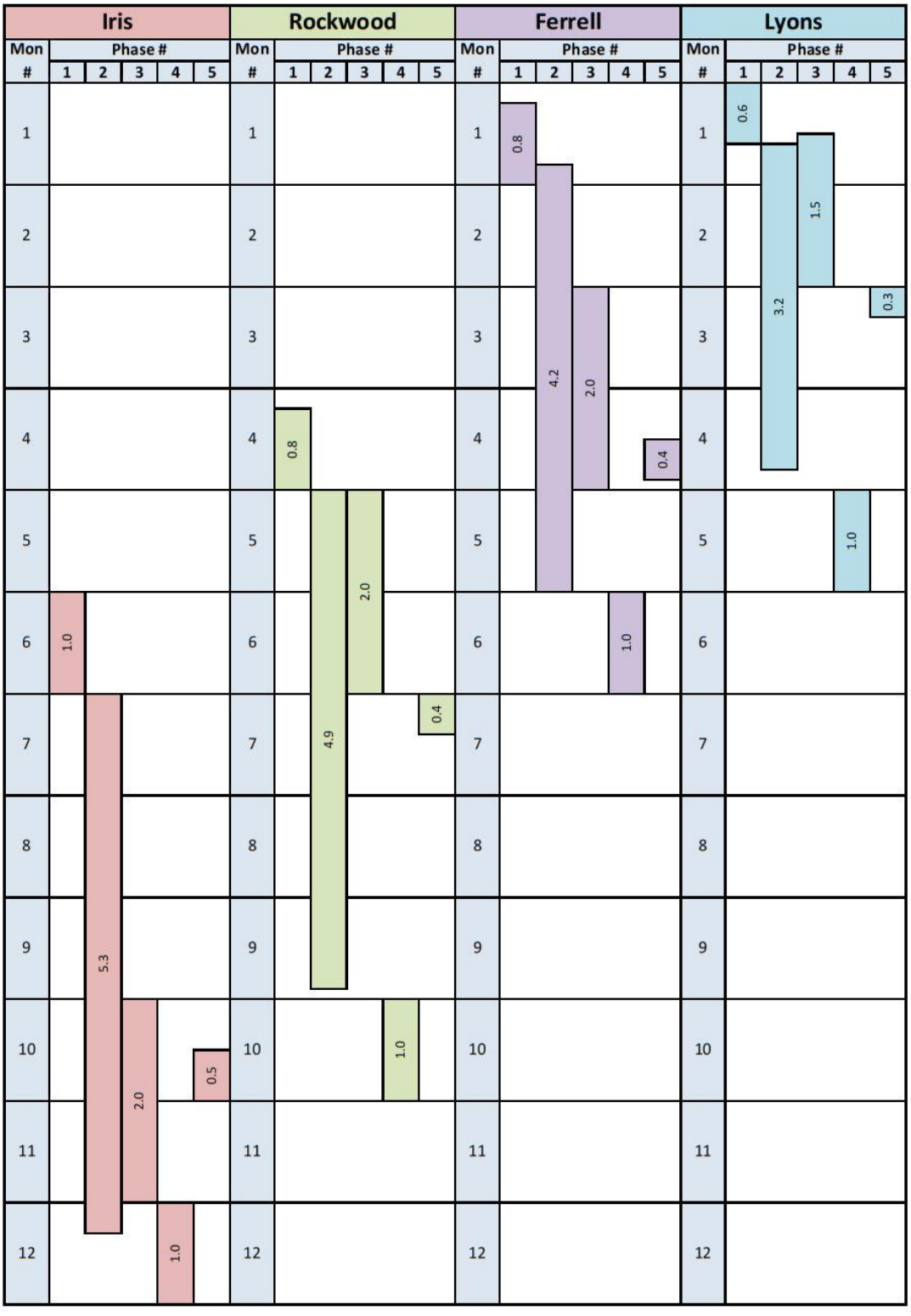

Figure 2 - Phase Activity Distributions

For each solar site, emissions from off-road equipment, such as tractors, graders, loaders, scrapers, forklifts, trenchers, cranes, rollers, and pavers; onsite mobile equipment, such as water trucks, pickup trucks, lube/fuel trucks, and flatbed delivery trucks; mobile activity from vendors, such as flatbed/delivery trucks and Porto-let trucks; and employee vehicular commute were estimated. Potential double counting that would occur by proportioning the size of the labor force as well as the duration of activity based on individual solar site size was left in to provide an overall conservative estimation. A detailed summary of the assumptions and model data used to estimate the Proposed Project's construction emissions is provided in Appendix A.

5.1.2 Operational Emissions

Once operational, sources of emissions associated with the IRIS Cluster would be limited to routine maintenance and monitoring activities, such as:

- Facility maintenance - replacing or repairing inverters, wiring and PV modules.
- Providing Site security
- Monitoring electricity generation
- Cleaning of PV panels

These facilities would operate seven days a week, 24 hours a day, generating electricity during normal daylight hours when the solar energy is available. Maintenance activities may occur seven days a week, 24 hours a day to ensure PV Panel output when solar energy is available. Additionally, the surface of the PV panels would be washed seasonally to increase the average optical transmittance of the flat panel surface. Since the Traffic Impact Analysis[29] (TIA) estimates that the entire IRIS Solar Cluster would require 40 vehicle trips per day during operations, the total trips were distributed between the four sites. These vehicle trips would be off-site trips consisting mostly worker commute, with the occasional general service, electrical service, and equipment/delivery vehicles. In addition there would be some activity from vehicles onsite including pickup trucks, water trucks, and utility/service vehicles.

A detailed summary of the assumptions and model data used to estimate the Proposed Project's operational emissions is provided in Appendix 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 CARB and ICAPCD.

5.2. Analysis of Environmental Impacts

IMPACT 1:Would the Project conflict with or obstruct implementation of the applicable air quality plan?

CEQA requires that projects be consistent with the applicable AQMP. A consistency determination plays an important role in local agency project review by linking local planning and individual projects to the AQMP. It fulfills the CEQA goal of informing decision-makers of the environmental efforts of the project under consideration at a stage early enough to ensure that air quality concerns are fully addressed.

ICAPCD's CEQA Handbook states that a CAQAR of a proposed project should demonstrate compliance with the most recent ozone AQMP and PM_{10} SIP. It also states the Analysis Report should also demonstrate compliance with the Imperial County Rules and Regulations but also those of the State and federal regulations.

[29] Traffic Impact Analysis. Iris Cluster Solar Farm. Linscott, Law & Greenspan. February 10, 2014

Ozone Air Quality Management Plan (AQMP)

In order to develop the Modified AQMP[30], a control strategy for meeting State and federal requirements is required. The ICAPCD control strategy included an interactive process of technology and strategy review supported by ambient air quality modeling. The air quality modeling assists in identifying current and remaining emission targets that would help to achieve the ambient air quality standards. The Modified AQMP control measures consist of three components: 1) the ICAPCD's Stationary Source Control Measures; 2) Regional Transportation Strategy and Control Measures; and 3) State Strategy. These measures primarily rely on the traditional command and control approach and as such provide the framework for ICAPCD Rules that reduce ROG and NO_X emissions.

The Proposed Project does not produce new residential activity, produces only minimal additional traffic activity during project operations; and does not fall outside of the modeling forecast estimations used in determining continued maintenance.

PM_{10} State Implementation Plan (PM_{10} SIP)

The PM_{10} SIP was required to address and meet the following elements, required under the FCAA of areas classified to be in serious nonattainment of the NAAQS:

- Best available emission inventories;
- A plan that enables attainment of the PM_{10} federal air quality standards;
- Annual reductions in PM_{10} or PM_{10} precursor emissions that are of not less than 5 percent from the date of SIP submission until attainment;
- Best available control measures and best available control technologies for significant sources and major stationary sources of PM_{10}, to be implemented no later than 4 years after reclassification of the area as serious;
- Transportation conformity and motor vehicle emission budgets in accord with the attainment plan;
- Reasonable further progress and quantitative milestones; and
- Contingency measures to be implemented (without the need for additional rulemaking actions) in the event that the control measure regulations incorporated in the plan cannot be successfully implemented or fail to give the expected emission reductions.

In November 2005, revised Regulation VIII fugitive dust control measures were adopted, which form the core of the Imperial County PM_{10} control strategy. Portions of Regulation VIII that would apply to Construction and Earthmoving Activities are:

- Required to limit Visible Dust Emissions (VDE) to 20% opacity by complying with the following measures:
    - Phase work to minimize the amount of disturbed surface area at one time;
    - Apply water or chemical stabilization;
    - Construct and maintain wind barriers around the activity site;
    - Restrict vehicular access to the area by fencing or signage;
    - Mitigate track out/carry out of bulk materials at the site in compliance with Rule 803; and
    - Transport bulk material to, from, and around the site in compliance with Rule 802.

[30] Final 2009 1997 8-Hour Modified Air Quality Management Plan. Imperial County Air Pollution Control District. July 13, 2010.

- Required to provide a Dust Control Plan that documents the type and location of the project, the expected start and completion dates of the dust generating activities, the total area of land surface to be disturbed, the actual and potential sources of fugitive dust emissions on the site (including the location of Bulk Material handling and storage areas, paved and unpaved roads, entrances and exits where track out/carry out may occur, etc.), and all the fugitive dust control measures to be implemented before, during, and after any dust-generating activity.
- For unpaved haul/access roads, unpaved traffic areas larger than 1 acre and with ≥ 75 average vehicle trips per day (AVTD), unpaved roads with ≥ 50 AVTD, and canal roads with ≥ 20 AVTD, VDE must be limited to 20% opacity by applying at least one of the stabilization methods described below;
    - Paving,
    - Applying chemical stabilization as directed by the product manufacturer,
    - Applying and maintaining gravel, recrushed/recycled asphalt or other material of low silt content (<5%) to a depth of three or more inches, or
    - Applying water one or more times daily.

At only 40 vehicles per day, operational activities related to the Proposed Project would not generate enough traffic to significantly impact regional transportation emissions budgets; will comply with all applicable ICAPCD Rules and Regulations[31]; and will comply with all applicable State and federal requirements for attainment of air quality objectives.

Level of Significance Before Mitigation: The Proposed Project would not conflict with, or obstruct implementation of, the applicable air quality plan, therefore would result in a less than significant impact.

Mitigation Measures: No mitigation measures are necessary.

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

IMPACT 2: Would the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

An impact is potentially significant if emissions levels exceed the State or federal AAQSs. The ICAPCD has established that construction related PM_{10} emissions can cause a substantial increase in localized concentrations, which under certain circumstances can contribute to violations of the State and federal AAQSs. As such, the Imperial County adopted Regulation VIII which contains a variety of feasible fugitive dust control measures to help bring the ICAPCD into compliance with the NAAQS. Therefore, compliance with Regulation VIII and its measures is required and applies to any project regardless of its determined level of significance or size. In addition, the proposed Project will adopt all feasible discretionary measures listed in the ICAPCD's Guidelines (see discussion of Impact 3).

Level of Significance Before Mitigation: The Proposed Project would not violate an air quality standard or contribute to an existing or projected air quality violation, therefore would result in a less than significant impact.

[31] Imperial County Air Pollution Control District Rules and Regulations. Imperial County Air Pollution Control District. Revised June 2, 2009.

Mitigation Measures: No mitigation measures are necessary.

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

IMPACT 3: Would the Project result in construction-related air quality impacts?

Construction of the Proposed Project would result in emissions of the air pollutants ROG, NO_X, CO, PM_{10}, $PM_{2.5}$, and SO_X. Emissions from construction would result from fuel combustion and exhaust from construction equipment as well as vehicle traffic, grading, and the use of toxic materials (e.g., paints and lubricants).

Criteria pollutant emissions from off-road construction equipment use were estimated using the underlying emission and load factors of URBEMIS and CalEEMod computer models. Emissions were estimated from the exhaust off-road equipment by using emission factors from Table 3.4 of Appendix D in the CalEEMod User's Guide[32] for year 2015. For default load factors, this AQR uses updated load factors from the Carl Moyer Program Guidelines[33].

Equipment type and activity levels for each activity phase of the Proposed Project's construction were derived from the project-specific analysis provided by WorleyParsons (WP) for the Beacon Photovoltaic Project EIR[34]. The WP data provided specific information including different types of construction equipment and vehicles that would be necessary for a solar project; the number of pieces of each type of equipment and number of vehicles; daily usage rates in terms of hours per day per piece of equipment and miles per day per vehicle; and the power rating of each type of equipment used.

Emissions from vehicular activity related to construction employees and vendors were estimated using CARB's EMFAC2011 Web Based Data Access[35] with emission rate data for Imperial County for the 2015 calendar year. This AQR used EMFAC2011's aggregate model years, which is an average age of vehicles specific for Imperial County. To generate expected exhaust emissions from employee vehicles, this AQR also used CARB's EMFAC2011 Web Based Data Access. In order to more accurately represent the type of vehicles used by the potential employee work pool, an activity-weighted average emission factor was generated using light-duty automobiles and light-duty trucks. The averages were derived from the distributions of vehicle miles travelled (VMT) from EMFAC2011.

Grading fugitive dust was estimated using methodology described in Section 11.9, Western Surface Coal Mining, of the EPA AP-42[36] and as presented in the CalEEMod User's Guide. Entrained road dust emissions were assigned to both employee and vendor activity. Per the ICAPCD, 50 percent of vehicular travel in Imperial County is assumed to be on unpaved roads. All of the on-site vehicular activity is assumed to be on unpaved roads.

Emissions are presented below for each of the four individual solar projects and the combined IRIS Cluster. Since the thresholds for criteria pollutants are in pounds per day, emissions estimated from each activity phase for each project, the combined with other activity phases where they overlap, to generate the maximum emissions per day.

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32 User's Guide: California Emissions Estimator Model (CalEEMod). South Coast Air Quality Management District. February 2011.

33 The 2011 Carl Moyer Program Guidelines. California Air Resources Board. March 27, 2013.

34 Beacon Photovoltaic Project. Draft Environmental Impact Report. SCH# 2012011029. Kern County Planning and Community Development Department. July 2012.

35 http://www.arb.ca.gov/msei/modeling.htm#emfac2011_web_based_data

36 Compilation of Air Pollutant Emission Factors – AP-42. Fifth Edition. United States Environmental Protection Agency. January 1995.

There is some overlap of activity phases for each separate project, as well as some overlap between projects in the overall scheduling of the entire IRIS Cluster. Emissions presented below are considered unregulated, which is to mean hypothetical emissions from construction activity, which does not apply equipment or activity restrictions or controls, even those required by ICAPCD regulations.

Project Specific Estimates

The FSF project is estimated to be completed within 6 months from project start and Table 12 presents the daily maximum hypothetical unregulated emissions for each month of construction for the Ferrell Solar Farm.

Table 12 – Unregulated Construction Emissions for Ferrell Solar Farm

Month/Activity	Criteria Emissions (lbs/day)				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
1st Month – Phases 1 & 2	6.6	53.6	51.6	197.4	23.7
2nd Month – Phase 2	3.3	30.3	27.3	125.9	14.8
3rd Month – Phases 2 & 3	4.7	37.2	38.9	141.4	16.9
4th Month – Phases 2, 3, & 5	5.3	40.8	43.8	148.0	17.9
5th Month – Phase 2	3.3	30.3	27.3	125.9	14.8
6th Month – Phase 4	1.5	7.3	8.5	12.9	1.9
Ferrell Maximum Daily	***6.6***	***53.6***	***51.6***	***197.4***	***23.7***
ICAPCD Threshold	*75*	*550*	*100*	*150*	*N/A*
Exceed Thresholds?	*No*	*No*	*No*	***Yes***	

The ISF project is estimated to be completed within 7 months from project start and Table 13 presents the daily maximum hypothetical unregulated emissions for each month of construction for each month of construction for the Iris Solar Farm.

Table 13 – Unregulated Construction Emissions for Iris Solar Farm

Month/Activity	Criteria Emissions (lbs/day)				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
1st Month– Phase 1	3.5	28.3	24.9	100.8	12.1
2nd Month – Phase 2	3.7	39.4	28.5	180.3	20.7
3rd Month – Phase 2	3.7	39.4	28.5	180.3	20.7
4th Month – Phase 2	3.7	39.4	28.5	180.3	20.7
5th Month – Phases 2, 3, & 5	5.7	51.3	45.2	211.6	24.8
6th Month – Phases 2 & 3	5.1	47.3	40.2	202.3	23.5
7th Month – Phases 2 & 4	5.2	47.6	37.1	198.7	23.2
Iris Maximum Daily	***5.7***	***51.3***	***45.2***	***211.6***	***24.8***
ICAPCD Threshold	*75*	*550*	*100*	*150*	*N/A*
Exceed Thresholds?	*No*	*No*	*No*	***Yes***	

The LSF project is estimated to be completed within 5 months from project start and Table 14 presents the daily maximum hypothetical unregulated emissions for each month of construction for each month of construction for the Lyons Solar Farm.

Table 14 – Unregulated Construction Emissions for Lyons Solar Farm

Month/Activity	Criteria Emissions (lbs/day)				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
1st Month – Phases 1, 2, & 3	7.2	41.4	60.7	97.5	13.3
2nd Month – Phases 2 & 3	4.2	24.4	37.2	64.7	8.6
3rd Month – Phases 2 & 5	3.4	21.9	30.8	60.3	7.9
4th Month – Phase 2	2.8	18.9	25.9	57.2	7.3
5th Month – Phase 4	1.4	6.1	8.4	6.0	1.2
Lyons Maximum Daily	***7.2***	***41.4***	***60.7***	***97.5***	***13.3***
ICAPCD Threshold	*75*	*550*	*100*	*150*	*N/A*
Exceed Thresholds?	*No*	*No*	*No*	*No*	

The RSF project is estimated to be completed within 7 months from project start and Table 15 presents the daily maximum hypothetical unregulated emissions for each month of construction for each month of construction for the Rockwood Solar Farm.

Table 15 – Unregulated Construction Emissions for Rockwood Solar Farm

Month/Activity	Criteria Emissions (lbs/day)				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
1st Month – Phase 1	3.4	24.5	24.4	78.2	9.7
2nd Month – Phases 2 & 3	4.8	39.7	39.2	156.6	18.6
3rd Month – Phases 2 & 3	4.8	39.7	39.2	156.6	18.6
4th Month – Phases 2 & 5	4.0	36.3	32.6	146.7	17.3
5th Month – Phase 2	3.4	32.6	27.6	139.5	16.2
6th Month – Phase 2	3.4	32.6	27.6	139.5	16.2
7th Month – Phase 4	1.5	7.5	8.6	14.3	2.1
Rockwood Maximum Daily	***4.8***	***39.7***	***39.2***	***156.6***	
ICAPCD Threshold	*75*	*550*	*100*	*150*	*N/A*
Exceed Thresholds?	*No*	*No*	*No*	***Yes***	

In summary, individually FSF, ISF, and RSF would potentially exceed the PM_{10} threshold if unregulated and LSF would not exceed any threshold.

IRIS Cluster

Since this AQR also analyzes the entirety of the IRIS Cluster, additional analysis evaluates the impacts on the construction of all four solar sites within a 12-month period. In addition to the impracticality of hiring four separate teams of contractors to accomplish the same phase activity concurrently, a staggering of phase activity can distribute the air quality impacts from the entire IRIS Cluster, reducing the impacts locally and regionally. Table 16 shows the hypothetical unregulated combined impacts from the construction of all four solar projects within a 12-month period using the Phase Activity Distributions presented in Figure 2.

Table 16 – Unregulated Criteria Temporal Summary for IRIS Cluster

Month #	Solar Farm	Criteria Emissions (lbs/day)				
		ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
1	Ferrell	6.63	53.62	51.60	197.38	23.69
	Lyons	7.24	41.40	60.72	97.87	13.33
	Month 1 Totals	**13.9**	**95.0**	**112.3**	**295.2**	**37.0**
2	Ferrell	3.31	30.33	27.32	125.86	14.76
	Lyons	4.17	24.42	31.25	64.73	8.57
	Month 2 Totals	**7.5**	**54.8**	**64.6**	**190.6**	**23.3**
3	Ferrell	4.7	37.19	38.88	141.44	16.91
	Lyons	3.43	21.90	30.76	60.32	7.88
	Month 3 Totals	**8.1**	**59.1**	**69.6**	**201.8**	**24.8**
4	Rockwood	3.37	24.53	24.43	78.94	9.74
	Ferrell	5.31	40.76	43.84	148.01	17.87
	Lyons	2.84	18.90	25.87	57.18	7.30
	Month 4 Totals	**11.5**	**84.2**	**94.1**	**284.1**	**34.9**
5	Rockwood	4.80	39.72	39.20	156.65	18.56
	Ferrell	3.31	30.33	27.32	125.86	14.76
	Lyons	1.44	6.12	8.40	6.04	1.17
	Month 5 Totals	**9.6**	**76.2**	**74.9**	**288.6**	**34.5**
6	Iris	3.53	28.28	24.91	101.66	12.21
	Rockwood	4.80	39.72	39.20	156.65	18.56
	Ferrell	1.49	7.27	8.55	12.92	1.92
	Month 6 Totals	**9.8**	**75.3**	**72.7**	**271.2**	**32.7**
7	Iris	3.69	39.40	28.48	180.34	20.69
	Rockwood	4.02	36.28	32.60	146.74	17.27
	Month 7 Totals	**7.7**	**75.7**	**61.1**	**327.1**	**38.0**
8	Iris	3.69	39.40	28.48	180.34	20.69
	Rockwood	3.41	32.60	27.61	139.48	16.24
	Month 8 Totals	**7.1**	**72.0**	**56.1**	**319.8**	**36.9**

Month #	Solar Farm	Criteria Emissions (lbs/day)				
		ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
9	Iris	3.69	39.40	28.48	180.34	20.69
	Rockwood	3.41	32.60	27.61	139.48	16.24
	Month 9 Totals	**7.1**	**72.0**	**56.1**	**319.8**	**36.9**
10	Iris	5.74	51.34	45.19	211.58	24.78
	Rockwood	1.50	7.49	8.58	14.29	2.06
	Month 10 Totals	**7.2**	**58.8**	**53.8**	**225.9**	**26.8**
11	Iris	5.12	47.32	40.17	202.28	23.53
	Month 11 Totals	**5.1**	**47.3**	**40.2**	**202.3**	**23.5**
12	Iris	5.22	47.58	34.14	198.71	23.19
	Month 12 Totals	**5.2**	**47.6**	**37.1**	**198.7**	**23.2**
	IRIS Cluster Maximum Daily	***13.9***	***95.0***	***112.3***	***327.1***	***38.0***
	ICAPCD Threshold	*75*	*550*	*100*	*150*	*N/A*
	Exceed Thresholds?	*No*	*No*	***Yes***	***Yes***	

The unregulated impacts from the construction of the entire IRIS Cluster within a 12 month period would exceed the thresholds for PM_{10} and NO_X.

Level of Significance Before Mitigation: The Proposed Project would potentially have a significant impact from construction-related emissions.

Mitigation and Control: As described above, three of the individual projects are expected to generate construction unregulated emissions that would exceed the ICAPCD construction threshold for PM_{10}. In addition, the unregulated construction of the entire IRIS Cluster is expected to generate construction emissions that exceed the PM_{10} and NO_X thresholds. Since the ICAPCD requires all projects to implement Standard Mitigation Measures as presented in their CEQA Guidelines[37] and, since the Proposed Project has a construction site greater than 5 acres, the ICAPCD also requires the inclusion of practicable Discretionary Mitigation Measures.

Therefore all individual projects will adopt all standard mitigations and all feasible discretionary mitigation measures for construction activities. Full compliance with ICAPCD's Regulation VIII Fugitive Dust Rules will also reduce fugitive dust emissions.

Although it is not Mitigation per CEQA standards, fugitive PM_{10} emissions will be reduced in the mandatory compliance with Regulation VIII. The operator shall implement the following Regulation VIII controls as listed in the CEQA Guidelines as standard mitigation measures:

- The operator shall insure that all disturbed areas, including bulk material storage which is not being actively utilized, will be effectively stabilized and visible emissions will be limited to no

[37] CEQA Air Quality Handbook: Guidelines for the Implementation of the California Air Quality Act of 1970, and amended. Imperial County Air Pollution Control District, November 2007.

greater than 20% opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps, or other suitable material such as vegetative ground cover.

- The operator shall insure that all on-site unpaved roads will be effectively stabilized and visible emissions be limited to no greater than 20% opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering.
- The operator shall insure that all unpaved traffic areas with 75 or more average vehicle trips per day will be effectively stabilized and visible emission be limited to no greater than 20% opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering.
- The operator shall insure that all transport (import or export) of borrow material used as cover material will be completely covered unless six inches of freeboard space from the top of the container is maintained with no spillage and loss of borrow material. In addition, the cargo compartment of all haul trucks is to be cleaned and/or washed at delivery site after removal of bulk material.
- The operator shall insure that all track-out or carryout will be cleaned at the end of each workday.
- The operator shall insure that all movement of borrow material handling or transfer shall be stabilized prior to handling or at points of transfer with application of sufficient water, chemical stabilizers, or by sheltering or enclosing the operation and transfer line.

In addition to Regulation VIII controls that relate to fugitive dust, the CEQA Guidelines include Standard Mitigations related to the exhaust emissions from construction equipment. In order to implement the CEQA Guidelines Standard Mitigation, the Project will implement the following mitigation:

MM-1 The operator shall implement the following standard mitigation measures for construction combustion equipment:

a. The operator shall insure the use of Tier 2 vehicles or the equivalent alternative fueled or catalyst equipped diesel construction equipment, where practicable, including all off-road and portable diesel powered equipment.

b. The operator shall insure that idling time will be minimized by either shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.

c. The operator shall limit, to the extent feasible, the hours of operation of heavy-duty equipment and/or the amount of equipment in use.

d. The operator shall, where practicable, replace fossil-fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).

MM-1 would result in approximately 70 percent reduction in ROG, 30 percent reduction in NO_X, and 50 percent reduction in PM from Tier 1 construction equipment as measured by applying control efficiencies supplied by the SCAQMD[38].

To help further reduce excess emissions and reduce emissions associated with fugitive PM_{10} and construction equipment exhaust, the following discretionary and enhanced mitigations have been determined to be the

[38] Mitigation Measures and Control Efficiencies. South Coast Air Quality Management District. http://www.aqmd.gov/ceqa/handbook/mitigation/MM_intro.html.

feasible for the Project and will be required.

MM-2 The operator shall water exposed soil with adequate frequency for continued moist soil and limit vehicle speed for all construction vehicles to less than 15 mph on any unpaved surface at the site.

MM-3 The operator shall limit, to the extent feasible, the hours of operation of heavy duty equipment and/or the amount of equipment in use.

Project Specific Estimates

Emissions presented below represent the estimated emissions associated with construction activity, which exhibit the "regulated" emissions resulting from compliance with ICAPCD Regulation VIII and emissions from construction activity, which are "mitigated" pursuant to Mitigation Measures, listed above.

Applying SCAQMD reduction percentages and controls obtained from Regulation VIII compliance, the mitigated emissions are presented in for FSF in Table 17, for ISF in Table 18, for LSF in Table 19, and for RSF in Table 20.

Table 17 – Regulated and Mitigated Construction Emissions for Ferrell Solar Farm

Month/Activity	Criteria Emissions (lbs/day)				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
1st Month – Phases 1 & 2	2.8	53.6	40.5	86.2	10.8
2nd Month – Phase 2	1.6	30.3	22.3	54.6	6.7
3rd Month – Phases 2 & 3	2.1	37.2	30.4	61.3	7.6
4th Month – Phases 2, 3, & 5	2.3	40.8	34.2	64.2	8.1
5th Month – Phase 2	1.6	30.3	22.3	54.6	6.7
6th Month – Phase 4	0.9	7.3	6.9	5.7	1.0
Ferrell Maximum Daily	***2.8***	***53.6***	***40.5***	***86.2***	***10.8***
ICAPCD Threshold	*75*	*550*	*100*	*150*	*N/A*
Exceed Thresholds?	*No*	*No*	*No*	*No*	

Table 18 – Regulated and Mitigated Construction Emissions for Iris Solar Farm

Month/Activity	Criteria Emissions (lbs/day)				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
1st Month– Phase 1	1.4	28.3	18.9	44.7	5.6
2nd Month – Phase 2	2.0	39.4	23.5	78.1	9.2
3rd Month – Phase 2	2.0	39.4	23.5	78.1	9.2
4th Month – Phase 2	2.0	39.4	23.5	78.1	9.2
5th Month – Phases 2, 3, & 5	2.7	51.3	35.6	91.7	11.1
6th Month – Phases 2 & 3	2.5	47.3	31.7	87.6	10.5
7th Month – Phases 2 & 4	2.9	47.6	30.5	86.2	10.5
Iris Maximum Daily	***2.9***	***51.3***	***35.6***	***91.7***	***11.1***
ICAPCD Threshold	*75*	*550*	*100*	*150*	*N/A*
Exceed Thresholds?	*No*	*No*	*No*	*No*	

Table 19 – Regulated and Mitigated Construction Emissions for Lyons Solar Farm

Month/Activity	Criteria Emissions (lbs/day)				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
1st Month – Phases 1, 2, & 3	2.5	41.4	46.2	43.1	6.3
2nd Month – Phases 2 & 3	1.5	34.4	28.8	28.2	4.0
3rd Month – Phases 2 & 5	1.3	21.9	24.6	26.4	3.7
4th Month – Phase 2	1.1	18.9	20.8	24.9	3.4
5th Month – Phase 4	0.8	6.1	6.8	2.8	0.7
Lyons Maximum Daily	***2.5***	***41.4***	***46.2***	***43.1***	***6.3***
ICAPCD Threshold	*75*	*550*	*100*	*150*	*N/A*
Exceed Thresholds?	*No*	*No*	*No*	*No*	

Table 20 – Regulated and Mitigated Construction Emissions for Rockwood Solar Farm

Month/Activity	Criteria Emissions (lbs/day)				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
1st Month – Phase 1	1.3	24.5	18.4	34.8	4.5
2nd Month – Phases 2 & 3	2.2	39.7	30.7	67.9	8.4
3rd Month – Phases 2 & 3	2.2	39.7	30.7	67.9	8.4
4th Month – Phases 2 & 5	1.9	36.3	26.4	63.6	7.8
5th Month – Phase 2	1.7	32.6	22.6	60.4	7.3
6th Month – Phase 2	1.7	32.6	22.6	60.4	7.3
7th Month – Phase 4	0.9	7.5	6.9	6.3	1.1
Rockwood Maximum Daily	***2.2***	***39.7***	***30.7***	***67.9***	***8.4***
ICAPCD Threshold	*75*	*550*	*100*	*150*	*N/A*
Exceed Thresholds?	*No*	*No*	*No*	*No*	

IRIS Cluster

Table 21 shows the regulated and mitigated emissions from construction all four sites within a 12-month period, i.e. the IRIS Cluster, by applying the regulated and mitigated emissions for each individual solar site to the Phase Activity Distributions.

Table 21 – Regulated and Mitigated Criteria Temporal Summary for IRIS Cluster

Month #	Solar Farm	Criteria Emissions (lbs/day)				
		ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
1	Ferrell	2.85	53.62	40.54	86.24	10.62
	Lyons	3.45	41.40	49.66	47.30	6.99
	Month 1 Totals	**6.3**	**95.0**	**90.2**	**133.5**	**17.8**
2	Ferrell	1.61	30.33	22.31	54.57	6.66
	Lyons	2.47	24.42	32.23	32.49	4.69
	Month 2 Totals	**4.1**	**54.8**	**54.5**	**87.1**	**11.4**
3	Ferrell	2.06	37.19	30.41	61.34	7.64
	Lyons	1.33	21.90	24.57	26.36	3.73
	Month 3 Totals	**3.4**	**59.1**	**55.0**	**87.7**	**11.4**
4	Rockwood	1.29	24.53	18.39	34.83	4.50
	Ferrell	2.27	40.76	34.20	64.24	8.12
	Lyons	1.14	18.90	20.85	24.94	3.41
	Month 4 Totals	**4.7**	**84.2**	**73.4**	**124.0**	**16.0**

Month #	Solar Farm	Criteria Emissions (lbs/day)				
		ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
5	Rockwood	2.16	39.72	30.74	67.90	8.36
	Ferrell	1.61	30.33	22.31	54.57	6.66
	Lyons	0.83	6.12	6.77	2.77	0.67
	Month 5 Totals	**4.6**	**76.2**	**59.8**	**125.2**	**15.7**
6	Iris	1.44	28.28	18.87	44.75	5.59
	Rockwood	0.45	7.12	8.14	7.46	1.05
	Ferrell	0.88	7.27	6.92	5.74	0.99
	Month 6 Totals	**2.8**	**42.7**	**33.9**	**57.9**	**7.6**
7	Iris	1.99	39.40	23.46	78.06	9.24
	Rockwood	1.92	36.28	26.40	63.64	7.82
	Month 7 Totals	**3.9**	**75.7**	**49.9**	**141.7**	**17.1**
8	Iris	1.99	39.40	23.46	78.06	9.24
	Rockwood	1.71	32.60	22.60	60.44	7.31
	Month 8 Totals	**3.7**	**72.0**	**46.1**	**138.5**	**16.5**
9	Iris	1.99	39.40	23.46	78.06	9.24
	Rockwood	1.71	32.60	22.60	60.44	7.31
	Month 9 Totals	**3.7**	**72.0**	**46.1**	**138.5**	**16.5**
10	Iris	2.70	51.34	35.55	91.66	11.13
	Rockwood	0.89	7.49	6.95	6.33	1.06
	Month 10 Totals	**3.6**	**58.8**	**42.5**	**98.0**	**12.2**
11	Iris	2.47	47.32	31.71	87.58	10.52
	Month 11 Totals	**2.5**	**47.3**	**31.7**	**87.6**	**10.6**
12	Iris	2.90	47.58	30.50	86.16	10.49
	Month 12 Totals	**2.9**	**47.6**	**30.5**	**86.2**	**10.5**
	IRIS Cluster Maximum Daily	***6.3***	***95.0***	***90.2***	***141.7***	***17.8***
	ICAPCD Threshold	*75*	*550*	*100*	*150*	*N/A*
	Exceed Thresholds?	*No*	*No*	*No*	*No*	

Level of Significance After Mitigation: Less than significant for each individual solar site and for the IRIS Cluster.

IMPACT 4: Would the Project result in operational-related air quality impacts?

These facilities would operate seven days a week, 24 hours a day, generating electricity during normal daylight hours when the solar energy is available. Maintenance activities may occur seven days a week, 24 hours a day to ensure PV Panel output when solar energy is available. Additionally, the surface of the PV panels would be washed seasonally to increase the average optical transmittance of the flat panel surface. Since the TIA estimates that the

entire IRIS Solar Cluster would require 40 vehicle trips per day during operations, the total trips were distributed between the four sites. These vehicle trips would be off-site trips consisting mostly worker commute, with the occasional general service, electrical service, and equipment/delivery vehicles. In addition there would be some activity from vehicles onsite including pickup trucks, water trucks, and utility/service vehicles. Table 22 summarizes each site's total project-related annual operational air emissions. The ICAPCD thresholds of significance are also included in this table as well as information regarding whether annual operational emissions would exceed those thresholds. As shown in Table 22, operational emissions would be well below ICAPCD Tier 1 Regional thresholds. Detailed emissions calculations are included in Appendix A.

Table 22 – Estimated Operational Criteria Emissions

Solar Farm	Activity Type	Criteria Emissions (lbs/d)				
		ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Iris	Onsite Activity	0.005	0.163	0.022	0.003	0.001
	Offsite Activity	0.080	2.626	0.347	0.043	0.018
	Iris Solar Farm Total	***0.08***	***2.79***	***0.37***	***0.05***	***0.02***
Rockwood	Onsite Activity	0.005	0.163	0.022	0.003	0.001
	Offsite Activity	0.064	2.108	0.278	0.034	0.014
	Rockwood Solar Farm Total	***0.07***	***2.27***	***0.30***	***0.04***	***0.02***
Ferrell	Onsite Activity	0.005	0.163	0.022	0.003	0.001
	Offsite Activity	0.059	1.936	0.256	0.031	0.013
	Ferrell Solar Farm Total	***0.06***	***2.10***	***0.28***	***0.03***	***0.01***
Lyons	Onsite Activity	0.005	0.163	0.022	0.003	0.001
	Offsite Activity	0.033	1.072	0.142	0.017	0.007
	Lyons Solar Farm Total	***0.04***	***1.24***	***0.16***	***0.02***	***0.01***
Maximum Daily for IRIS Cluster		***0.3***	***8.4***	***1.1***	***0.1***	***0.1***
ICAPCD Regional Thresholds		*55*	*550*	*55*	*150*	*NA*
Exceed Thresholds?		*No*	*No*	*No*	*No*	

Level of Significance Before Mitigation: The Proposed Project's operational emissions would not create a significant quantity of criteria emissions, therefore would result in a less than significant impact..

Mitigation Measures: No mitigation measures are necessary.

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

IMPACT 5: Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

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

- Consistency with the ICAPCD 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 2, during construction, after implementation of mitigation measures, emissions of NO_X and PM_{10} are not expected to exceed the ICAPCD regional significance thresholds. It is assumed that construction emissions that do not exceed the project specific thresholds will not result in a cumulative impact.

Air Quality Plans

The area in which the Project is located, is in nonattainment for ozone and PM_{10}. As such, the ICAPCD is required to prepare and maintain an AQMP to document the strategies and measures to be undertaken to reach attainment of ambient air quality standards. While the ICAPCD 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. As discussed above in Impact 1, the Project is compliant with the AQMP and would not result in a significant impact.

Cumulative Health Impacts

The area is in nonattainment for ozone and PM_{10}, which means that the background levels of those pollutants are at times higher than the ambient air quality standards. 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 exceed the standard, it is likely that some of the sensitive individuals of the population experience adverse health effects.

The localized significance analysis in Impact 2 demonstrated that during construction activities, no localized significance threshold was expected to be exceeded; therefore, the emissions of particulate matter and NO_X would not result in a significant cumulative health impact.

Level of Significance before Mitigation: The Proposed Project would not result in cumulatively considerable net increase of a precursor to a criteria pollutant for which the region is in 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.

IMPACT 6: Would the Project expose sensitive receptors to substantial pollutant concentrations?

Sensitive receptors are defined as land uses where sensitive population groups are likely to be located (e.g., children, the elderly, the acutely ill, and the chronically ill). 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.

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 vicinity consists predominantly of agricultural and undeveloped land with an occasional rural residence.

Even though the Proposed Project has a few residential (rural-very low density) adjacent to the solar site's boundaries, the physical proximity to the construction activity is not adjacent. It is important to note that distances to potential receptors are measured from the exterior boundary of the project and not from the individual construction project areas within the interior of the site. The Proposed Project's compliance with Regulation VIII will prevent the residences exposure to substantial pollutant concentrations.

Another way a project can establish significance with this impact is the potential to create a CO hotspot. CO hotspots can occur when vehicles are idling at highly congested intersections. According to the TIA[39], the IRIS Cluster would not create an increase in congestion of the magnitude required to generate a CO hotspot.

During construction activities, diesel equipment will be operating and DPM is known to the State of California as a TAC. However, the risks associated with exposure to substances with carcinogenic effects are typically evaluated based on a lifetime of chronic exposure, which is defined as 24 hours per day, 7 days per week, 365 days per year, for 70 years. However, the short-term nature of project construction would support that exposure to diesel exhaust emissions during construction would not be significant.

Level of Significance Before Mitigation: The Proposed Project would not expose the public to substantial pollutant concentrations.

Mitigation Measures: No mitigation measures are necessary.

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

IMPACT 7: Would the Project create objectionable odors 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. 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 ICAPCD. Because offensive odors rarely cause any physical harm and no requirements for their control are included in State or federal air quality regulations, the ICAPCD has no rules or standards related to odor emissions, other than its nuisance rule.

The construction and operation of a solar farm is not an odor producer nor located near an odor producer; therefore, the IRIS Cluster would not result in a significant odor impact.

Level of Significance Before Mitigation: The IRIS Cluster would not create objectionable odors affecting a substantial number of people.

Mitigation Measures: No mitigation measures are necessary.

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

[39] Traffic Impact Analysis. Iris Cluster Solar Farm. Linscott, Law & Greenspan. February 10, 2014.

IMPACT 8: Would the Project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

Construction and operation of the Proposed Project would result in a relatively small amount of GHG emissions. The project would generate GHG emissions during construction and routine operational activities at the sites. During construction, GHG emissions would be generated from operation of both on-road and off-road equipment. Once operational, emissions associated with the Proposed Project would be limited to vehicle trips associated with routine maintenance and monitoring activities at each of the sites.

Solar projects are an integral part of CARB's emission reduction strategy presented in the Scoping Plans. The 2008 Scoping Plan[40] specifically addresses critical complementary measures directed at emission sources that are included in the cap-and-trade program that are designed to achieve cost-effective emissions reductions while accelerating the necessary transition to the low-carbon economy. One of these measures was the RPS, which was to promote multiple objectives, including diversifying the electricity supply by accelerating the transformation of the Electricity sector, including investment in the transmission infrastructure and system changes to allow integration of large quantities of intermittent wind and solar generation. Therefore this project complies with an approved GHG emission reduction plan and is presumed to have less-than-significant GHG impacts.

Using the methods developed by the SCAQMD when comparing to their adopted GHG thresholds, GHGs are quantified as the sum of annual operational GHG emissions and total construction GHG emissions amortized over 30 years. Table 23 shows that the amortized construction plus annual operation for the IRIS Cluster would be 172 tCO_2e per year.

In addition, the Proposed Project would be a renewable source of energy that could displace electricity generated by fossil fuel combustion and provide low-GHG electricity to consumers. Of the potential fossil fuels typically used for power generation, natural gas is one of the cleanest. To provide a conservative estimate, this AQR estimated emissions that would be generated from an equivalent amount of energy by natural gas generators to estimate the reduction in GHG emissions by electricity displacement by assuming that the solar power displaces electricity generated by dispatchable natural-gas fired combined-cycle power plants and that the Proposed Project has a capacity factor of 26 percent. Natural gas energy requirements for generation by combined-cycle power plants and emission factors from The Climate Registry were used to estimate the displaced emissions. This AQR estimated the 360 MW generated by the IRIS Cluster would displace 306,749 tCO_2e per year. Detailed calculations are presented in Appendix A.

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

Table 23 – Proposed Project GHG Emissions

Phase	Source	tCO_2e per Year
Construction	Ferrell (FSF)	346
	Iris (ISF)	429
	Lyons (LSF)	197
	Rockwood (RSF)	*405*
	IRIS Cluster Construction Total	**1,439**
	Amortized over 30 years	**48**
Operation	Ferrell (FSF)	30.9
	Iris (ISF)	39.7
	Lyons (LSF)	19.9
	Rockwood (RSF)	33.1
	IRIS Cluster Operational Total	**124**
	Total Annual Emissions	**172**
	Annually Displaced Emissions	(306,749)
	Net Project GHG Emissions	***(306,557)***

Level of Significance Before Mitigation: The IRIS Cluster would not generate GHG emissions, either directly or indirectly, 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.

IMPACT 9: Would the Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

One of the critical complementary measures directed at emission sources that are included in the cap-and-trade program is the RPS, which places an obligation on electricity supply companies to produce 33 percent of their electricity from renewable energy sources by 2020. A key prerequisite to reaching the target would be to provide sufficient electric transmission lines to renewable resource zones and system changes to allow integration of large quantities of intermittent wind and solar generation. The IRIS Cluster would help the State meet this goal by generating up to 360 MW of power to California's current renewable portfolio. Therefore, in this regard, the IRIS Cluster would help the state meet its goals under AB 32.

Neither the County of Imperial or ICAPCD have any specific plans, policies, nor regulations adopted for reducing the emissions of GHGs. However, since the long-term, operational GHG emissions are minimal and the construction emissions are short-term, the Proposed Project would not conflict with any applicable plan, policy, or regulation adopted for reducing the emissions of GHGs.

Level of Significance Before Mitigation: The IRIS Cluster 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.