4.3 AIR QUALITY

This section discusses potential impacts to air quality resulting from the implementation of the proposed project. Information and analysis in this section have been compiled based on an understanding of the existing ambient air quality and review of existing technical data, applicable laws, regulations, and guidelines.

4.3.1 Existing Conditions

The project is located in Inyo County, which is part of the Great Basin Valleys Air Basin (Basin). The Basin is named for its geological formation of valleys surrounded by mountains. Air rises and sinks in the Basin due to the heat in the valleys and height of the mountains that causes the air and its pollutants to settle in the valleys and basins. The Basin also includes Alpine and Mono Counties. Areas within the Basin are under the jurisdiction of the GBUAPCD, which regulates air pollutant emissions for all stationary sources within the Basin.

4.3.1.1 Climate

The variable climate of the Basin is determined by its diverse terrain and geographic location. The climate of the region is greatly influenced by the Sierra Nevada and is generally semi-arid to arid, characterized by low precipitation, abundant sunshine, frequent winds, moderate to low humidity, and high potential for evapotranspiration.

The average minimum winter temperature is in the high 20 degrees Fahrenheit (°F), while the average maximum summer temperature is in the mid- to high 70°F. Most precipitation occurs between November and February. Spring is the windiest season, with fast-moving northerly weather fronts. During the day, southerly winds result from the strong solar heating of the nearby mountain slopes, causing upslope circulation. Summer winds are northerly at night as a result of cool air draining from higher to lower elevations.

4.3.1.2 Criteria Air Pollutants

Air quality regulations were first promulgated with the Federal Clean Air Act (CAA) of 1970. Air quality is defined by ambient air concentrations of seven criteria air pollutants, which are a group of common air pollutants identified by the USEPA to be of concern with respect to the health and welfare of the general public. Federal and state governments regulate criteria air pollutants by using ambient standards based on criteria regarding the health and/or environmental effects of each pollutant. The criteria pollutants are defined as follows: nitrogen dioxide (NO_2), ozone (O_3), particulate matter (including both particulate matter with a diameter of 10 microns or less [PM_{10}] and a diameter of 2.5 microns or less [$PM_{2.5}$]), carbon monoxide (CO), sulfur dioxide (SO_2), and lead. The state and federal air quality standards for the criteria pollutants are provided in Table 4.3-1.

Table 4.3-1
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone	1-Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	-	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		-		
Fine Particulate Matter ($PM_{2.5}$)[8]	24-Hour	-	-	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12 µg/m^3		
Carbon Monoxide (CO)	1-Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3	-	Non-Dispersive Infrared Photometry (NDIR)-
	8-Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	-	
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		-	-	
Nitrogen Dioxide (NO_2)[9]	1-Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	0.100 ppm (188 µg/m^3)	-	Gas Phase Chemilumi-nescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[10]	1-Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	-	Ultraviolet Fluorescence; Spectro-photometry (Pararo-saniline Method
	3-Hour	-		-	0.5 ppm (1300 µg/m^3)	
	24-Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3) (for certain areas)[9]	-	
	Annual Arithmetic Mean	-		0.030 ppm (80 µg/m^3) (for certain areas)[9]	-	
Lead[11,12]	30-Day Average	1.5 µg/m^3	Atomic Absorption	-	-	High Volume Sampler and Atomic Absorption
	Calendar Quarter	-		1.5 µg/m^3	Same as Primary Standard	
	Rolling 3-Month Average	-		0.15 µg/m^3		
Visibility Reducing Particles[13]	8-Hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape	**No Federal Standards**		
Sulfates	24-Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[11]	24-Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Footnotes on next page

Notes for Table 4.3-1:

Source: CARB 2013

mg/m^3 = milligrams per cubic meter; ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter

[1] California standards for ozone, CO (except Lake Tahoe), SO_2 (1- and 24-hour), nitrogen dioxide, suspended particulate matter—PM_{10}, $PM_{2.5}$, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the CCR.

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

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

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

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

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

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

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

[9] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 and 0.100 ppm, respectively.

[10] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-hour average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards have are approved.

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

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

[13] In 1989, the CARB converted both the general statewide 10-mile visibility standards and the Lake Tahoe 20-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Ambient air quality refers to the atmospheric concentration of a specific compound (amount of pollutants in a specified volume of air) that occurs at a particular geographic location. The ambient air quality levels measured at a particular location are determined by the interactions of emissions, meteorology, and chemistry. Emission considerations include the types, amounts, and locations of pollutants emitted into the atmosphere. Meteorological considerations include wind and precipitation patterns affecting the distribution, dilution, and removal of pollutant emissions. Chemical reactions can transform pollutant emissions into other chemical substances. Ambient air quality data are generally reported as a mass per unit volume (e.g., micrograms per cubic meter of air) or as a volume fraction (e.g., parts per million [ppm] by volume).

Pollutant emissions typically refer to the amount of pollutants or pollutant precursors introduced into the atmosphere by a source or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the ambient air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as CO, SO_2, lead, and some particulates, are emitted directly into the atmosphere from emission sources. Secondary pollutants, such as O_3, NO_2, and some particulates, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes. PM_{10} and $PM_{2.5}$ are generated as primary pollutants by various mechanical processes (e.g., abrasion, erosion, mixing, or atomization) or combustion processes. However, PM_{10} and $PM_{2.5}$ can also be formed as secondary pollutants through chemical reactions or by gaseous pollutants condensing into fine aerosols.

4.3.1.3 Toxic Air Contaminants

Toxic air contaminants (TAC) are a diverse group of air pollutants that may cause or contribute to an increase in deaths or in serious illness or that may pose a present or potential hazard to human health. TACs include both organic and inorganic chemical substances that may be emitted from a variety of common sources, including gasoline stations, motor vehicles, dry cleaners, industrial operations, painting operations, and research and teaching facilities. TACs are different than the criteria pollutants previously discussed because ambient air quality standards have not been established for TACs. TACs occurring at extremely low levels may still cause health effects, and it is typically difficult to identify levels of exposure that do not produce adverse health effects. TAC impacts are described by carcinogenic risk and by chronic (i.e., of long duration) and acute (i.e., severe but of short duration) adverse effects on human health.

Diesel engines emit a complex mixture of air pollutants, composed of gaseous and solid material. The solid emissions in diesel exhaust are known as diesel particulate matter (DPM). In 1998, California identified DPM as a TAC based on its potential to cause cancer, premature death, and other health problems (e.g., asthma attacks and other respiratory symptoms). Those most vulnerable are children whose lungs are still developing and the elderly who may have other serious health problems. Overall, diesel engine emissions are responsible for the majority of California's known cancer risk from outdoor air pollutants. Diesel engines also contribute to California's $PM_{2.5}$ air quality problems. In addition, diesel soot causes a reduction in visibility.

4.3.1.4 Local Air Quality

An area is designated in attainment when it is in compliance with the National Ambient Air Quality Standards (NAAQS) and/or California Ambient Air Quality Standards (CAAQS). These standards are set by the USEPA or CARB for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or the public welfare.

The criteria pollutants of primary concern that are considered in this section include O_3, NO_2, CO, SO_2, PM_{10}, and $PM_{2.5}$. Although there are no ambient standards for VOCs or NO_X, they are important as precursors to O_3.

The Basin is a federal nonattainment area for PM_{10}, as shown in Table 4.3-2. The primary source of PM_{10} emissions in the County is from the dry Owens Lakebed. Therefore, the State of California is required to prepare and update State Implementation Plans (SIPs) for this pollutant. The SIPs comprise individual plans prepared by the agencies responsible for air quality management in each nonattainment area. In the Basin, the GBUAPCD is the responsible agency and the plan to attain the federal PM_{10} standard is the *2008 Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan*.

Table 4.3-2
GREAT BASIN VALLEYS AIR BASIN ATTAINMENT STATUS

Criteria Pollutant	Federal Designation	State Designation
O_3 (1-hour)	(No federal standard)	Nonattainment
O_3 (8-hour)	Attainment/Unclassified	Nonattainment
CO	Attainment/Unclassified	Attainment
PM_{10}	Serious Nonattainment*	Nonattainment
$PM_{2.5}$	Attainment/Unclassified	Attainment
NO_2	Attainment/Unclassified	Attainment
SO_2	Unclassified	Attainment
Lead	Attainment/Unclassified	Attainment

Source: CARB 2014a
*Nonattainment area is the Owens Valley PM_{10} Planning Area

Although Inyo County is categorized as nonattainment for the state ozone standard, there is no ozone implementation plan, nor is one required under state law. According to the CARB Ozone Transport Review, which is a statewide assessment of ozone transport between air basins, ozone levels would improve in the Basin only when substantial mitigation measures are more fully implemented in upwind air basins.

Monitoring Data

Criteria air pollutant concentrations are currently measured at 15 monitoring stations in the Basin. The only station in the County that monitors ozone is the Death Valley National Park monitoring station, which is located in the eastern portion of the County. Similarly, the only station in the County that monitors $PM_{2.5}$ is the Keeler monitoring station, which is in the central portion of the County and is located at 190 Cerro Gordo Road. Of the 15 monitoring stations in

the County, 14 stations monitor PM_{10}. The northern most monitoring station is the Bishop-Line station, also known as the White Mountain Research Station, and the southernmost monitoring station is the Coso Junction-US 395 station. Table 4.3-3 shows pollutant levels at each applicable station. PM_{10} levels are shown for three monitoring stations that represent conditions in the northern, central, and southern portions of the County.

Table 4.3-3
BACKGROUND CONCENTRATIONS AT
INYO COUNTY MONITORING STATION

Air Pollutant	2011	2012	2013	Monitoring Station
Ozone				
Max 1-hour (ppm)	0.084	0.082	0.080	Death Valley National Monument
Days > CAAQS (0.09 ppm)	0	0	0	
Max 8-hour (ppm)	0.079	0.078	0.074	Death Valley National Monument
Days > NAAQS (0.075 ppm)	3	1	0	
Days > CAAQS (0.070 ppm)	20	8	5	
Particulate Matter (PM_{10})				
Max Daily ($\mu g/m^3$)	261.0	136.0	325.0	Bishop-Line
Days > NAAQS (150 $\mu g/m^3$)	4	0	3	
Max Daily ($\mu g/m^3$)	13,380.0	571.0	392.0	Keeler-Cerro Gordo Road
Days > NAAQS (150 $\mu g/m^3$)	9	4	8	
Max Daily ($\mu g/m^3$)	219.0	173.0	162.0	Coso Junction-US 395 Rest Area
Days > NAAQS (150 $\mu g/m^3$)	3	1	2	
Particulate Matter ($PM_{2.5}$)				
Max Daily ($\mu g/m^3$)	208.0	99.0	93.6	Keeler-Cerro Gordo Road
Days > NAAQS (35 $\mu g/m^3$)	9	4	8	

Source: CARB 2014b
> = exceeding; ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter;
Standard Mean = Annual Arithmetic Mean

4.3.1.5 Sensitive Receptors

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

The County is located in an Isolated Rural area. As such, the County has a relatively small population, with the majority of people living in small communities along US 395. Existing sensitive receptors in each SEDA and the OVSA are discussed below.

Western Solar Energy Group

Laws Solar Energy Development Area

Existing sensitive receptors within the Laws SEDA include some residences within the Laws community, as well as a group of residences along the northern border of the County approximately one mile east of US 6. There are no hospitals or other non-residence sensitive receptors within the Laws SEDA.

Owens Lake Solar Energy Development Area

Existing sensitive receptors within the Owens Lake SEDA include residences within the Keeler community, as well as residences within a quarter mile outside of the Owens Lake SEDA boundary in the community of Cartago. There are no hospitals or other non-residence sensitive receptors within the Owens Lake SEDA.

Rose Valley Solar Energy Development Area

Existing sensitive receptors within the Rose Valley SEDA include scattered residences primarily along US 395. Existing residences are also located within a quarter mile outside of the Rose Valley SEDA boundary. Relative to the boundary, residences are located to the northwest, between the communities of Grant and Olancha, and to the west, in the northern portion of the SEDA near Sage Flats Road and in the southern portion of the SEDA west of Sykes. There are no hospitals or other non-residence sensitive receptors within the Rose Valley SEDA.

Pearsonville Solar Energy Development Area

Existing sensitive receptors within the Pearsonville SEDA include some residences along US 395 in the community of Pearsonville. There are no hospitals or other non-residence sensitive receptors within the Pearsonville SEDA.

Owens Valley Study Area

Existing sensitive receptors within the OVSA include residences, schools, hospitals, and recreation areas. The majority of sensitive receptors are located within the City of Bishop and the communities of (north to south) West Bishop, Wilkerson, Big Pine, Independence, Lone Pine, and Alabama Hills. However, existing residences are also scattered throughout the OVSA in less populated areas. Additionally, some existing residences are located within a quarter mile of the OVSA boundary; these include residences within the Laws community and a few residences west of the Alabama Hills community.

Southern Solar Energy Group

Trona Solar Energy Development Area

Existing sensitive receptors within the Trona SEDA include a few residences west of Trona Wildrose Road. Existing residences are also located within a quarter mile outside of the Trona SEDA boundary. These residences are located to the south of the SEDA and west of Trona

Road, in the Pioneer Point community of San Bernardino County. There are no hospitals or other non-residence sensitive receptors within the Trona SEDA.

Eastern Solar Energy Group

Chicago Valley Solar Energy Development Area

Existing sensitive receptors within the Chicago Valley SEDA include a few residences east of Chicago Valley Road approximately 0.5 mile north of the southern SEDA boundary. There are no hospitals or other non-residence sensitive receptors within the Chicago Valley SEDA.

Charleston View Solar Energy Development Area

Existing sensitive receptors within the Charleston View SEDA include residences to the north and south of Tecopa Road. A few residences are also located across the California-Nevada state line and within a quarter mile outside of the SEDA boundary. There are no hospitals or other non-residence sensitive receptors within the Charleston View SEDA.

Sandy Valley Solar Energy Development Area

Existing sensitive receptors within the Sandy Valley SEDA include a few residences associated with local agriculture. Within a quarter mile outside of the SEDA boundary, existing sensitive receptors include some Nevada residences and a Clark County park, named Peace Park, which contains the Sandy Valley Senior Center. There are no other sensitive receptors within the Sandy Valley SEDA.

4.3.1.6 Regulatory Framework

Federal Regulations

The CAA of 1970 and the CAA Amendments of 1971 required the USEPA to establish NAAQS. The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The CAA requires the USEPA to reassess the NAAQS at least every five years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States retain the option to adopt more stringent standards or to include other specific pollutants.

As part of its enforcement responsibilities, the USEPA requires each state with federal nonattainment areas to prepare and submit a SIP that demonstrates the means to attain and maintain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution by using a combination of performance standards and market-based programs within the SIP-identified timeframe.

State Regulations

The CARB, a part of CalEPA, has established the California Clean Air Act and is responsible for the coordination and administration of both federal and state air pollution control programs within California, including setting the CAAQS. The CARB also has primary responsibility for

the development of California's SIP, for which it works closely with the federal government and the local air districts.

In addition to primary and secondary ambient air quality standards, California has established a set of episode criteria for O_3, CO, NO_2, SO_2, and particulate matter. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health.

Local Regulations

The GBUAPCD enforces regulations and administers permits governing stationary sources by limiting emissions of criteria air pollutants and TACs. The GBUAPCD has adopted rules and regulations that regulate visible emissions, nuisance emissions, and fugitive dust emissions. The following rules would apply to the project:

- Rules 200-A and 200-B. Permits Required: Before any individual builds or operates anything which may cause the issuance of air contaminants or the use of which may eliminate, reduce or control the issuance of air contaminants, such person must obtain a written authority to construct and permit to operate from an Air Pollution Control Officer.

- Rules 401 and 402. Fugitive Dust and Nuisance: Rule 401 requires that airborne particles remain at their place of origin under normal wind circumstances. Mitigation techniques, approved by the GBUAPCD must be implemented to ensure the containment of fugitive dust. Rule 401 does not apply to emissions discharged through a stack (point source). Rule 402 specifies that any discharge from any source in quantities of air contaminants or other materials which may cause injury, detriment, nuisance or annoyance, or damage to any public property or considerable number of people should be regulated.

Regional Comprehensive Plan

The Basin is identified as an Isolated Rural area, which means that its emissions are not part of an emissions analysis of any metropolitan planning area or plan. Thus, there is no regional plan to guide growth and transportation in the area.

Inyo County General Plan

Air Quality is addressed within the Public Safety Element of the General Plan 92001, as amended). Section 9.2, Air Quality, of the Public Safety Element contains the following goals and policies to protect air quality in the County:

- Goal AQ-1: Provide good air quality for Inyo County to reduce impacts to human health and the economy.

- Policy AQ-1.1: Regulations to Reduce PM_{10}. Support the implementation of the SIP and the agreement between GBUAPCD and the LADWP to reduce PM_{10}.

- Policy AQ-1.2: Attainment Programs. Participate in the GBUAPCD's attainment programs.

- Policy AQ-1.3: Dust Suppression During Construction. Require dust-suppression measures for grading activities.

- Policy AQ-1.4: Energy Conservation. Encourage the use of energy-conservation devices in public and private buildings.

- Policy AQ-1.5: Monitor Regional Development. Publicly object to development proposals within the region that do not adequately address and mitigate air quality impacts, especially fugitive dust.

4.3.2 Significance Thresholds

The impact analysis provided below is based on the application of the following State CEQA Guidelines Appendix G thresholds of significance, which indicate that a project would have a significant impact if it would:

- Conflict with or obstruct implementation of any applicable air quality plan.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- 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).
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.

Neither Inyo County nor the GBUAPCD have established numerical significance thresholds for quantitatively determining air quality impacts. CEQA, however, allows lead agencies to rely on standards or thresholds promulgated by other agencies. The GBUAPCD has allowed use of the numerical standards of the Mojave Desert Air Quality Management District (MDAQMD) in prior CEQA reviews. Because the air quality and pollutant attainment status in portions of the Mojave Desert Air Basin (MDAB) are similar to those of the Basin, the numerical thresholds set for MDAB are considered adequate to serve as significance thresholds for the proposed project.

4.3.2.1 Construction Emissions

The GBUAPCD considers short-term construction equipment exhaust emissions to be less than significant. However, since the air basin is within the Owens Valley PM_{10} Planning Area, fugitive dust emissions from construction must be mitigated. Therefore, construction emissions, including TAC emissions from construction activities, are evaluated qualitatively in the context of the significance thresholds identified below.

4.3.2.2 Operational Emissions

Project operations would have a significant impact to air quality if operational emissions from both direct and indirect sources exceed any of the threshold levels identified in Table 4.3-4. For

nonattainment pollutants, if emissions exceed the thresholds shown in the table, the project could have the potential to result in a cumulatively considerable net increase in these pollutants and thus could have a significant impact on the ambient air quality.

Table 4.3-4
AIR POLLUTANT SIGNIFICANCE THRESHOLDS

Pollutant	Significance Thresholds (pounds per day)
VOC	137
NO_X	137
CO	548
SO_X	137
PM_{10}	82
$PM_{2.5}$	82

Source: MDAQMD 2009

4.3.3 Impact Analysis

The REGPA is designed to minimize impacts to air quality by constraining renewable energy development in the County in conjunction with the General Plan's existing protection for such resources. Indirectly, individual future projects have the potential to impact air quality resources.

The following impact analysis primarily focuses on utility scale solar energy facilities because those would result in the greatest change to the ambient environment due the potential expanse of such facilities; however, the analysis also applies to the other proposed categories of solar energy facilities, including distributed generation and community scale facilities.

The proposed REGPA also includes provisions for development of small scale solar energy facilities. However, due to their small size(e.g., small array of ground- or roof-mounted PV panels), and location (on the building or the property it serves), these developments are currently allowed throughout the County within any zoning district under ICC Title 18, and require only electrical and building permits for development. As a result, these developments are not considered to result in impacts under CEQA, and would not typically require the CEQA analysis or associated mitigation measures described in this document.

The County routinely reviews all development proposals for environmental impacts. Therefore, all future solar energy projects would be evaluated on a project-specific basis to assess specific impacts to air quality against the program-level analysis contained in this PEIR. Applicable mitigation measures identified in this PEIR would be implemented for the individual project, as well as any additional mitigation or design measures identified in the air quality analysis conducted for the project.

Air quality is largely a regional issue, rather than a site-specific issue. As such, it is not necessary to discuss each SEDA and the OVSA individually for every air quality issue area. The

following impact analysis has therefore been separated into discussions for each SEDA and the OVSA only when deemed appropriate.

4.3.3.1 Conformance to Applicable Air Quality Plans

Pursuant to the CAA, the GBUAPCD is required to reduce emissions of criteria pollutants for which the Basin is in nonattainment. Because Inyo County is a nonattainment area for PM_{10}, activities resulting from the proposed project may be subject to emission control strategies contained within the OVSA PM_{10} SIP.

The project proposes new General Plan policies and implementation measures to encourage and direct the type, siting, and size of future renewable energy development within the County. Several of the proposed policies and measures would directly support and/or strengthen the existing air quality goals, policies, and measures within the General Plan, as shown below.

New Mineral and Energy Resources Policy

3. Policy MER-2.7: Dust Control. The County shall work with renewable energy solar developers to ensure that dust creation during the construction and operations of a renewable energy solar facility are avoided to the extent practicable.

New Mineral and Energy Resources Implementation Measures

7. Work with applicants to maintain pre-project vegetation during the construction and operation of renewable energy solar facilities and/or to plant new native, low-water-use vegetation, or agriculture crops as dust control measures.

8. Encourage the use of new materials and technologies as they evolve for dust control measures.

New Air Quality Implementation Measure

1. Support appropriate efforts to combine air quality improvements with other social, cultural, and environmental goals, including renewable energy solar facility development.

The proposed policies and implementation measures would support the reduction of fugitive dust, would be consistent with the existing General Plan, and would support the objectives of the Owens Valley Planning Area PM_{10} SIP. Therefore, construction and operation of the project would not obstruct implementation of the SIP and impacts would be less than significant.

4.3.3.2 Conformance to Federal and State Ambient Air Quality Standards

Implementation of the proposed project would result in the development of large-scale solar energy projects. These types of projects have the potential to result in impacts associated with construction and operational emissions. Emissions would be dependent on construction activities and are not site-specific. Because construction activities would be similar for each SEDA and the OVSA, these areas are not discussed individually.

Construction Impacts

Construction of solar developments would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, dust emissions, and combustion pollutants from on-site construction equipment and off-site trucks hauling construction materials, including water to the site. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions. Fugitive dust emissions would primarily result from site preparation and road construction activities. NO_X and CO emissions would primarily result from the use of construction equipment and motor vehicles.

Construction would generally consist of several phases including site preparation, development of staging areas and site access roads, solar tracker array assembly and installation, and potentially construction of electrical transmission facilities. Site preparation would include clearing and grubbing of sparse vegetation from areas of the site that would be utilized for project development. Grading activities would be required associated with road construction.

Construction traffic would primarily include the delivery of construction equipment, vehicles, and materials including concrete and possibly water; and daily construction worker trips. The majority of the equipment (e.g., solar panels, trackers, etc.) would likely be delivered to project sites in standard width and length covered vans or flatbed trailers. Projects may require travel over unpaved roads. Equipment, materials, and labor would likely come from the Inyo County area; however, it is possible that some equipment, materials, and labor would need to come from outside areas due to the rural nature of Inyo County. Emissions would vary based on the length of travel, with higher emissions associated with longer trips.

Overall, construction of solar developments would require similar equipment and construction activities. Construction activities would be temporary and short-term in nature and would vary day to day depending on the nature or phase of construction (e.g., demolition/land clearing, grading and excavation, tracker installation). Smaller developments would require less overall water use (both on-site and imported sources) for dust control purposes, and would have a shorter overall construction schedule, and therefore, total annual emissions would be lower. However, daily construction efforts and equipment would be similar to that of a larger development.

Construction-related dust is addressed in GBUAPCD Rule 401 and 402. With implementation of Mitigation Measures AQ-1 through AQ-3, which will ensure compliance with GBUAPCD Rules 401 and 402 through dust control measures, fugitive dust would be minimized. However, emissions of fugitive PM_{10} can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors. Because details regarding individual solar projects are unknown at this time, project-specific analyses will be necessary to ensure that potential emissions associated with construction comply with the daily emission thresholds. Therefore, impacts would be considered potentially significant.

Operational Impacts

The operation of solar developments would result in emissions from worker vehicles, personnel transport vehicles, panel washing equipment, and service trucks during operation and maintenance. Emissions would be dependent on the size of solar development and the associated number of operation and maintenance personnel. Typically, solar developments do not require a substantial number of operation and maintenance personnel and associated emissions are relatively low.

Solar developments could, however, result in a reduction of fugitive dust. Tests using wind tunnels have shown that, when properly aligned (perpendicular to primary wind directions), solar arrays can work effectively as a dust control measure by blocking wind and dust. The use of wind deflectors can enhance this effect by lifting winds that may otherwise flow beneath panels. The LADWP is currently exploring this option on the Owens Dry Lake with a solar demonstration project of 500 kW (anticipated to be completed before the end of 2014). If proven effective, solar developments throughout the SEDAs and the OVSA could assist in the reduction of PM_{10} concentrations throughout the Basin and would thereby support the Basin in becoming an attainment area for PM_{10}.

Although solar facilities could result in reduced dust emissions, their effectiveness would be dependent on a site-specific design. Because details regarding the design of individual solar projects are unknown at this time, project-specific analyses will be necessary to ensure that potential emissions associated with operation comply with the daily emission thresholds. As such, impacts would be considered potentially significant.

4.3.3.3 Cumulatively Considerable Net Increase of Criteria Pollutants

Construction Impacts

As discussed previously, implementation of the proposed project would result in the temporary addition of pollutants to the local airshed caused by construction activities of numerous potential solar developments. New general plan policies and implementation measures included in the proposed project would support the reduction of emissions; however, if construction activities result in an exceedance of daily thresholds for PM_{10} or O_3 precursors, the project would result in a cumulatively considerable net increase in criteria pollutants.

The extent to which all reasonably foreseeable cumulative projects and the proposed project would result in significant cumulative impacts depends on their proximity and construction schedules. Although maximum daily construction pollutant impacts could contribute to a cumulatively considerable impact associated with PM_{10} emissions during construction activities, impacts would be temporary, localized to the project site and would not be emitted over long distances. Following completion of project construction, all construction-related criteria pollutant impacts would cease. Accordingly, generation of PM_{10} emissions when combined with other cumulative projects, particularly those occurring nearby and simultaneously, would result in a potentially significant temporary cumulative impact to air quality.

Operational Impacts

Operation of the solar projects associated with implementation of the proposed REGPA is not anticipated to result in a substantial increase in vehicular or stationary emissions once installed. As a result, long-term NO_X, VOC, and PM_{10} emissions resulting from project operations are anticipated to be below applicable thresholds. Further, implementation of the REGPA would reduce region-wide emissions by promoting facilities that generate energy from sustainable sources, such as solar, which are not dependent combustion of fossil fuels to supply energy needs for the region. Therefore, the project would not contribute to a cumulatively considerable net increase in nonattainment pollutants during operation and impacts would be less than significant.

4.3.3.4 Impacts to Sensitive Receptors

As discussed in Section 3.1, existing sensitive receptors are located throughout the SEDAs and the OVSA; however, the majority of the land within these locations is undeveloped.

Carbon Monoxide

Construction Impacts

CO emissions are the result of the combustion process and therefore primarily associated with mobile source emissions (vehicles). Implementation of the proposed project would potentially result CO emissions related to trips from daily construction workers, initial delivery of construction equipment and vehicles, and phased delivery of construction materials including solar panels. Some construction deliveries could require oversized transport vehicles that travel at slower speeds and intrude into adjacent travel lanes. Construction-related traffic is not anticipated to substantially increase congestion of nearby roadway intersections near sensitive receptors due to the intermittent and temporary nature of construction traffic. Thus, construction-related traffic is not expected to cause an exceedance of the CO CAAQS. Impacts would be less than significant.

Operational Impacts

CO concentrations tend to be higher in urban areas where there are many mobile-source emissions. The proposed project is located in an isolated rural area and development of solar farms is not anticipated to occur directly adjacent to more densely populated areas. Operational traffic volumes related to maintenance activities would be negligible and is anticipated to have a negligible effect on the congestion of nearby roadway intersections.

Furthermore, vehicle emissions are anticipated to decrease in future years due to vehicle fleets continuing to turnover and more stringent vehicle emissions control standards coming into effect. Therefore, the operation of the proposed project would not expose sensitive receptors to substantially high concentrations of CO or contribute traffic volumes to intersections that would result in an exceedance of the CO CAAQS; therefore, this impact would be less than significant.

Toxic Air Contaminants – Diesel Particulate Matter

Construction Impacts

Construction would result in the generation of DPM emissions from the use of off-road diesel construction equipment required for mass site grading and earthmoving, trenching, asphalt paving, and other construction activities. Other construction-related sources of DPM include material delivery trucks and construction worker vehicles. However, not all construction worker vehicles would be diesel-fueled and most DPM emissions associated with material delivery trucks and construction worker vehicles would occur off site.

The State of California determined that DPM from diesel-fueled engines poses a chronic health risk with long-term inhalation exposure. The risks associated with carcinogenic effects are typically evaluated based on a lifetime of chronic exposure (i.e., 24 hours per day, 7 days per week, 365 days per year for 70 years). Because generation of DPM from construction projects typically occur in a single area for a short period of time, construction emissions of diesel exhaust is not expected to result in long-term chronic lifetime exposure to diesel exhaust from heavy duty diesel equipment. Therefore, construction-related emissions of TACs would not expose sensitive receptors to substantial emissions of TACs and impacts would be less than significant.

Operational Impacts

Solar farm operation, maintenance, and inspection generally require minimal use of diesel trucks and use of emergency generators. Thus, operations would not generate any major operational sources of TAC or DPM, and impacts would be less than significant.

4.3.3.5 Odor Impacts

Construction Impacts

Construction would result in the emission of diesel fumes and other odors typically associated with construction activities. Odors from these sources would be localized and generally confined to the immediate area surrounding the construction site. These compounds would be emitted in varying amounts on the site depending on where construction activities are occurring, number and types of construction activities occurring, and prevailing weather conditions, among other factors. Projects would utilize typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. Therefore, the proposed project would not create objectionable odors affecting a substantial number of people, and impacts would be less than significant.

Operational Impacts

Land uses and industrial operations that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. PV panels associated with solar array equipment would not generate objectionable odors during operation and maintenance of the facility. Operations would consist of standard service and personnel vehicles which would visit

the site regularly during inspection, maintenance, and washing activities. Therefore, operation of the proposed project would not create objectionable odors affecting a substantial number of people, and impacts would be less than significant.

4.3.4 Level of Significance before Mitigation

Based on the analyses in Section 4.3.3, future utility scale, distributed generation, and community scale solar energy facility projects under the REGPA could result in potentially significant impacts related to: (1) daily threshold exceedances during construction activities; (2) daily threshold exceedances during operations; and (3) cumulatively considerable net increase in criteria pollutants during construction activities. These impacts require mitigation to reduce them to the maximum extent feasible. Small-scale projects are typically considered to result in no impacts under CEQA.

4.3.5 Mitigation Measures

Air quality mitigation measures have been developed for solar energy development projects producing more than 20 MW of electricity for off-site use (utility scale) and would be implemented to mitigate adverse impacts to air quality. As previously mentioned, small scale solar energy projects are considered to result in no impacts under CEQA; however, all individual solar energy facility project applications (including small scale, community scale, and distributed generation) shall be reviewed by the County, and the need for implementation of the following mitigation measures shall be determined based on the professional judgment of a qualified county planner, pursuant to ICC Title 21 and State CEQA Guidelines. For example, community scale solar developments (i.e., roof- or ground-mounted PV panels for a specific community's use) may be determined by a qualified county planner to have no potential impact on air quality and would not require a project-specific air quality evaluation or implementation of the mitigation measures listed in this section. In such cases, the County shall document that no impacts to air quality will occur and no mitigation measures are necessary in lieu of the air quality evaluation required in Mitigation Measure AQ-1.

If a proposed distributed generation or community scale solar development project is determined by the County to have the potential to impact air quality, then the following mitigation measures shall be implemented as determined necessary by the qualified county planner. The County will review future solar energy development proposals to determine if they meet the requirements of Section 15162 of the State CEQA Guidelines; projects that do not meet the requirements may require additional CEQA analysis prior to approval. Similar to proposed distributed generation and community scale solar energy projects, small scale solar project applications undergo County review, and implementation of additional CEQA review and/or mitigation measures shall be at the discretion of a qualified county planner.

The following mitigation measures would reduce emissions of criteria pollutants during construction and operation of projects developed under the REGPA.

MM AQ-1: Prepare site-specific air quality technical report.

Prior to issuance of Major Use Permits for solar energy projects, a site-specific air quality technical report shall be prepared and approved by the County, which will verify compliance with County and GBUAPCD standards during construction and operation of the solar project.

Mitigation Measures AQ-2 and AQ-3, as defined below, will be incorporated into the site-specific technical report, and will be implemented during construction and operation of future projects. These measures require implementation of dust control practices during construction activities and solar project operations.

MM AQ-2: Reduce fugitive dust and particulate matter emissions during construction.

To control emissions of particulate matter, and to ensure compliance with GBUAPCD Rules 401 and 402 as well as applicable BMPs from REAT's Best Management Practices and Guidance Manual (REAT 2010), solar projects shall implement fugitive dust and particulate matter emissions control measures including, but not limited to the following:

- Water and/or coarse rock all active construction areas as necessary and indicated by soil and air conditions;
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard;
- Pave or apply (non-toxic) soil stabilizers on all unpaved access roads;
- Sweep daily (with water sweepers) all paved access roads;
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets;
- Suspend excavation and grading activity when sustained winds make reasonable dust control difficult to implement, e.g., for winds over 25 miles per hour (mph).
- Limit the speed of on-site vehicles to 15 mph.

MM AQ-3: Implement dust control measures during operation.

To control emissions of particulate matter, and to ensure compliance with GBUAPCD Rules 401 and 402 as well as applicable BMPs from REAT's Best Management Practices and Guidance Manual (REAT 2010), solar projects shall incorporate feasible dust control measures into the site design including, but not limited to, the following:

- Incorporate wind deflectors intermittently across solar project sites;
- Orient infrastructure/solar panels perpendicular to primary wind directions; and
- Adjust panel operating angles to reduce wind speeds under panels.

4.3.6 Significant Unavoidable Adverse Impacts

Based on the implementation of Mitigation Measures AQ-1 through AQ-3, all identified project-related impacts associated with air quality would be avoided or reduced below a level of significance, with no significant unavoidable adverse impacts.

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