3.3 Air Quality and Greenhouse Gases

This section contains a description of the environmental setting, regulatory setting, and potential impacts associated with the construction and operation of the proposed project and alternatives with respect to air quality and greenhouse gases (GHGs).

3.3.1 Environmental Setting

The project extends from the Ivanpah Valley in San Bernardino County, California, to the Eldorado Valley in Clark County, Nevada. The California section of the proposed project lies within the easternmost portion of San Bernardino County in the Mojave Desert Air Basin. The Nevada section lies within southern Clark County.

3.3.1.1 Climate

The proposed project area is mostly rural. There are no weather stations close to the proposed route. However, weather stations at the Naval Air Weapons Station (NAWS) China Lake, approximately 120 miles west of the project, and at the McCarran Airport in Las Vegas Valley, approximately 20 miles north of the project, have been used to provide representative data for the project.

At the NAWS China Lake weather station, the climate is semi-arid desert with average annual precipitation of about 2 inches. Gusty winds occur in late winter and early spring months due to cold fronts. Strong westerly winds can bring up the wind speed from an average of 25 knots to 35 knots. Due to the surrounding mountainous topography and to wind speeds, there can be transfer of pollutants from one area to another. Summers have warm, dry days and cool nights. Daytime temperatures can rise to 100 degrees Fahrenheit (°F) or above and fall to the mid-60s during the night. Average annual snowfall is minimal (NCDC 1996).

At the McCarran Airport weather station summers are typical for deserts with semi-arid conditions. Daytime conditions are warm and dry with high temperatures around 100°F and above, and nights are cool with temperatures in the mid-70s. Moist summer air can spawn severe thunderstorms which can result in heavy soil erosion in the foothills. The Sierra Nevada Mountains of California act as barriers in preventing moisture from the Pacific Ocean. As a result, there are not many rainy days in the area. Snowfall is rare, although there have been exceptions. Winds that produce major storms are from the southwest to the valley or from the northwest through the pass (NCDC 1996).

3.3.1.2 Air Quality

The Federal Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (U.S. EPA) to set National Ambient Air Quality Standards (NAAQS) for criteria pollutants that are emitted from numerous and diverse sources. These pollutants are considered harmful to public health and the environment. U.S. EPA has set NAAQS for seven criteria pollutants: carbon monoxide (CO), lead, nitrogen dioxide (NO_2), ozone, particulate matter less than or equal to 10 micrometers in diameter (PM_{10}), particulate matter less than or equal to 2.5 micrometers in diameter ($PM_{2.5}$), and sulfur dioxide (SO_2). Ozone is not emitted directly from emission sources but is created in the atmosphere via a chemical reaction between oxides of nitrogen (NO_X) and volatile organic compounds (VOCs) in the presence of sunlight. As a result, NO_X and VOCs are often referred to as ozone precursors and are regulated as a means to prevent ground-level ozone formation.

The State of California has also established California Ambient Air Quality Standards (CAAQS) for these criteria pollutants, as well as ambient air quality standards for sulfates, hydrogen sulfide (H_2S), vinyl chloride, and visibility-reducing particles (VRPs). Clark County, Nevada, has also established ambient air quality standards (AAQS) that in most instances are equivalent to NAAQS. The NAAQS, Clark County AAQS, and CAAQS are summarized in Table 3.3-1.

Table 3.3-1 Summary of National, California, and Clark County Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS		CAAQS	Clark County AAQS
		Primary	Secondary		
CO	8-hour	9 ppm[a]	—	9 ppm	9 ppm
	1-hour	35 ppm[a]	—	20 ppm	35 ppm
Lead	3-month (rolling average)	0.15 µg/m^3	0.15 µg/m^3	—	—
	Quarterly	1.5 µg/m^3	1.5 µg/m^3	—	1.5 µg/m^3
	30-day	—	—	1.5 µg/m^3	—
NO_2	Annual	0.053 ppm	0.053 ppm	0.030 ppm	0.053 ppm
	1-hour	0.100 ppm[e]	—	0.18 ppm	—
Ozone	8-hour	0.075 ppm[b] (0.08 ppm)[b,c]	0.075 ppm[b] (0.08 ppm)[b,c]	0.070 ppm	0.08 ppm
	1-hour	—	—	0.09 ppm	0.12 ppm
PM_{10}	Annual	—	—	20 µg/m^3	50 µg/m^3
	24-hour	150 µg/m^3 [d]	150 µg/m^3 [d]	50 µg/m^3	150 µg/m^3
$PM_{2.5}$	Annual	15.0 µg/m^3 [e]	15.0 µg/m^3 [e]	12 µg/m^3	15 µg/m^3
	24-hour	35 µg/m^3 [f]	35 µg/m^3 [f]	—	65 µg/m^3
SO_2	Annual	0.03 ppm	—	—	0.03 ppm
	24-hour	0.14 ppm	—	0.04 ppm	0.14 ppm
	3-hour	—	0.5 ppm	—	0.50 ppm
	1-hour	—	—	0.25 ppm	—
Sulfates	24-hour	—	—	25 µg/m^3	—
H_2S	1-hour	—	—	0.03 ppm	—
Vinyl chloride	24-hour	—	—	0.01 ppm	—
Visibility reducing particles	8-hour	—	—	Extinction coefficient of 0.23 per km visibility of 10 miles or more due to particles when relative humidity is less than 70%.	—

Source: CARB 2008

Notes:

[a]Not to be exceeded more than once per year.

[b]To attain this standard, the 3-year average of the fourth highest daily maximum 8-hour average concentration over a year must not exceed the standard.

[c]1997 standard. The implementation rules for this standard will remain in place for implementation purposes as U.S. EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.

[d]Not to be exceeded more than once per year on average over 3 years.

[e]To attain this standard, the 3-year average of the 98th percentile must not exceed the standard.

[f]The 3-year average of the 98th percentile of 24-hour concentrations within an area must not exceed the standard.

Key:

CO = carbon monoxide
km = kilometer
H_2S = hydrogen sulfide
NO_2 = nitrogen dioxide
$PM_{2.5}$ = particulate matter with a diameter of 2.5 micrometers or less
PM_{10} = particulate matter with a diameter of 10 micrometers or less
ppm = parts per million
SO_2 = sulfur dioxide
µg/m^3 = micrograms per cubic meter

The U.S. EPA compares ambient air criteria pollutant measurements with NAAQS to assess air quality in regions within the United States. Similarly, the California Air Resources Board (CARB) compares air pollutant measurements in California with CAAQS. Based on these comparisons, regions are placed in one of the following categories:

- Attainment – A region is "in attainment" if monitoring shows ambient concentrations of a specific pollutant are less than or equal to NAAQS or CAAQS. In addition, an area that has been re-designated from nonattainment to attainment is classified as a "maintenance area" for 10 years to ensure that the air quality improvements are sustained.
- Nonattainment – If the NAAQS or CAAQS are exceeded for a pollutant, the region is designated as nonattainment for that pollutant.
- Unclassifiable – An area is unclassifiable if the ambient air monitoring data are incomplete and do not support a designation of attainment or nonattainment.

The closest representative ambient air monitoring station to the project is in Jean, Nevada. The maximum 8-hour ozone concentration at this station in 2008 was 0.078 parts per million (ppm). For PM_{10}, the maximum 24-hour average concentration in 2008 was 96 micrograms per cubic meter ($\mu g/m^3$) and the annual average concentration was 14 $\mu g/m^3$ (U.S. EPA 2009a). In California, an ambient air monitoring station is located in the Mojave National Preserve. The maximum 8-hour ozone concentration at this station in 2008 was 0.086 ppm (U.S. EPA 2009a).

The portion of the Mojave Desert Air Basin where project activities would occur is currently designated as nonattainment for PM_{10} (NAAQS and CAAQS) and ozone (CAAQS only). This portion of the basin is designated as attainment and/or unclassifiable for all other pollutant NAAQS and CAAQS. The portion of Clark County where project activities would occur is currently designated nonattainment for the ozone NAAQS. This portion of the county is designated as attainment and/or unclassifiable for all other pollutant NAAQS. The air quality designations of areas of project activity are summarized in Table 3.3-2.

Hazardous air pollutants (HAPs; also referred to as toxic air contaminants [TACs] in California) are air pollutants suspected or known to cause cancer, birth defects, neurological damage, or other health issues. HAPs can originate from mobile sources such as vehicles or off-road equipment. Diesel engines emit a complex mix of pollutants, the most visible of which are very small carbon particles or "soot," known as diesel particulate matter (DPM). CARB has identified DPM as a TAC. Except for lead, there are no established ambient air quality standards for HAPs. Instead, these compounds are managed on a case-by-case basis depending on the quantity and type of emissions and proximity of potential receptors.

3.3.1.3 Greenhouse Gases and Climate Change

According to the U.S. EPA, "Climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer)" (U.S. EPA 2009b). Climate change may be affected by a number of factors including solar radiation, ocean circulation, and human activities such as burning fossil fuels or altering the Earth's surface through deforestation or urbanization, among other factors (U.S. EPA 2009c).

Table 3.3-2 Attainment Status within the Proposed Project Area

Pollutant	Desert Portion of San Bernardino County, California, in the Mojave Desert Air Basin[a]		Clark County, Nevada[b]
	NAAQS	CAAQS	NAAQS
CO	A	A	A
Lead	A	A	A/U
NO_2	A/U	A/U	A/U
Ozone	A/U	Moderate NA	NA
PM_{10}	Moderate NA	NA	A
$PM_{2.5}$	A/U	A/U	A/U
SO_2	A/U	A/U	A/U
Sulfates	--	A	--
H_2S	--	U	--
VRP	--	U	--

Sources: MDAQMD 2008, U.S. EPA 2009a

Notes:
[a]Refers only to the portion of San Bernardino County, California, and the Mojave Desert Air Basin where project activities would occur.
[b]Refers only to the portion of Clark County, Nevada where project activities would occur.

Key:
A = attainment
A/U = attainment/unclassifiable
CO = carbon monoxide
H_2S = hydrogen sulfide
km = kilometer
NA = nonattainment
NO_2 = nitrogen dioxide
$PM_{2.5}$ = particulate matter with a diameter of 2.5 micrometers or less
PM_{10} = particulate matter with a diameter of 10 micrometers or less
ppm = parts per million
SO_2 = sulfur dioxide
U = unclassifiable
µg/m³ = micrograms per cubic meter

GHGs refer to gases that trap heat in the atmosphere, causing a greenhouse effect. As defined in California Assembly Bill (AB) 32, GHGs include, but are not limited to, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF_6). Atmospheric concentrations of the two most important directly emitted, long-lived GHGs—CO_2 and CH_4—are currently well above the range of atmospheric concentrations that occurred over the last 650,000 years (Pew Center 2008). According to the Intergovernmental Panel on Climate Change (IPCC), increased atmospheric levels of CO_2 are correlated with rising temperatures; concentrations of CO_2 have increased by 31 percent above pre-industrial levels since 1750 (Figure 3.3-1). Climate models show that temperatures will probably increase by 1.4 degrees Celsius (°C) to 5.8°C by 2100 (IPCC 2007).

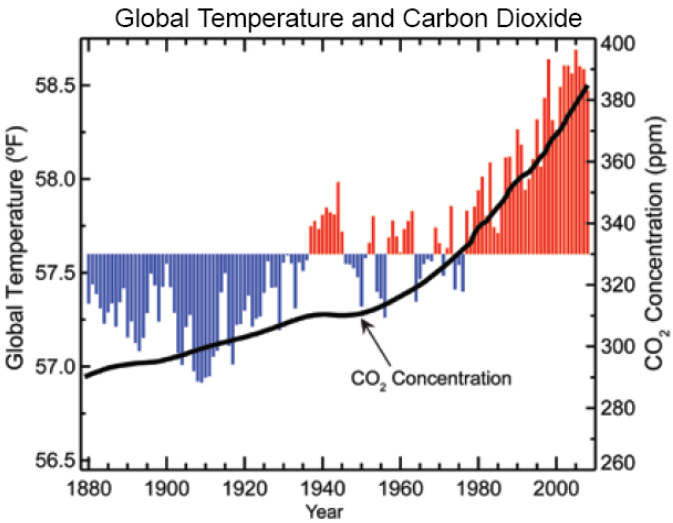

Figure 3.3-1 Relationship between Global Temperature and Carbon Dioxide
Source: IPCC 2001

Global warming potential (GWP) estimates how much a given mass of a GHG contributes to climate change. The term enables comparison of the warming effects of different gases. GWP uses a relative scale that compares the warming effect of the gas in question with that of the same mass of CO_2. The CO_2 equivalent (CO_2e) is a measure used to compare the effect of emissions of various GHGs based on their GWP, when projected over a specified time period (generally 100 years). CO_2e is commonly expressed as million metric tons (MMT) of CO_2 equivalents ($MMTCO_2e$). The CO_2e for a gas is obtained by multiplying the mass of the gas (in tons) by its GWP.

Climate Change impacts - State of California and Southwestern US

In AB 32, the legislature recognized California's particular vulnerability to the effects of global warming, finding that global warming will "have detrimental effects on some of California's largest industries, including agriculture, wine, tourism, skiing, recreational and commercial fishing, and forestry" (Health and Safety Code [H&SC] Section 38501, subd. (b)). Since the project area is among the parts of the state that experience hot weather, this area is at a greater likelihood of suffering from any electricity shortages caused by the strains of global warming. It may also feel the economic and public health damages from changes in vegetation and crop patterns, lower summer reservoirs, and increased air pollution that a changed climate will bring (CARB 2009). MDAQMD has not published any area-specific impacts, but it can be expected that the area would experience conditions similar to those projected in the Southwestern U.S.

If global warming emissions continue unabated, California is expected to face poorer air quality, a sharp rise in extreme heat, a less reliable water supply, more dangerous wildfires, and expanding risks to agriculture. Statewide annual temperatures are expected to increase by as much as 10°F by the end of the century. As temperatures rise, electricity demand will also increase. Diminished snow melt flowing through dams, potentially exacerbated by decreasing precipitation, would decrease the potential for hydropower production in California.

Under the expected scenarios for current projections of GHG emissions level impacts, it can be expected that the most germane regional impacts discussed above would be an increased risk of wildfires, higher local seasonal temperatures, and an increase in seasonal flash flooding.

3.3.2 Applicable Laws, Regulations, and Standards

Ambient air quality and air pollutant emissions from stationary and mobile sources are managed under a framework of federal, state, and local rules and regulations.

3.3.2.1 Federal

The CAA establishes the U.S. EPA's responsibilities to protect and improve the nation's air quality. The U.S. EPA oversees the implementation of federal programs for permitting new and modified stationary sources, controlling toxic air contaminants, and reducing emissions from motor vehicles and other mobile sources. The U.S. EPA also requires that each state prepare and submit a State Implementation Plan (SIP) for review. The SIP consists of background information, rules, technical documentation, and agreements that an individual state will use to clean up polluted areas. The plans and rules associated with them are enforced by the state and local agencies, but are also federally enforceable.

At this time, there are no finalized federal laws, regulations, or standards governing GHG emissions at the federal level in the U.S.

General Conformity

The General Conformity Rule has been promulgated by the U.S. EPA to ensure that the actions of federal departments or agencies conform to the applicable SIP. The General Conformity Rule covers direct and indirect emissions of criteria pollutants or their precursors that are caused by a federal action, are reasonably foreseeable, and can practically be controlled by the federal agency through its continuing program responsibility. A federal action is exempt from the General Conformity Rule requirements if the action's total net emissions are below the *de minimis* levels specified in the rule and are not regionally significant. An analysis of the project indicates that net direct and indirect emissions associated with project construction and operation would be less than the thresholds that would trigger the need for a General Conformity Determination under this rule.

3.3.2.2 State

California

The California Clean Air Act outlines a statewide air pollution control program in California. CARB is the primary administrator of the California Clean Air Act, while local air quality districts administer air rules and regulations at the regional level. CARB is responsible for establishing CAAQS, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and preparing the SIP. CARB uses air quality management plans prepared by local air quality districts as the basis of SIP development. CARB has adopted regulations to reduce the emissions from diesel exhaust for on-road vehicles and off-road equipment.

GHG Regulations

Until recently, climate change was not considered an environmental impact under CEQA, and GHG emissions associated with projects were not quantified, disclosed, or mitigated. Over the last five years, however, multiple legislative actions have occurred.

On June 1, 2005, California Governor Arnold Schwarzenegger issued Executive Order S-3-05, establishing statewide GHG emission reduction targets of 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. On September 27, 2006, Governor Schwarzenegger signed the Global Warming Solutions Act, AB 32, which capped the state's GHG emissions at 1990 levels by 2020. This was the first statewide program in the country to mandate an economy-wide emissions cap that included enforceable penalties.

Based on its 1990–2004 inventory of GHG emissions in California, CARB staff recommended an amount of 427 $MMTCO_2e$ as the total statewide GHG 1990 emissions level and 2020 emissions limit. CARB approved the 2020 limit on December 6, 2007. This limit is an aggregated statewide limit, rather than sector- or facility-specific. CARB estimated emissions levels as approximately 480 $MMTCO_2e$ in year 2007. The 2020 reduction target is currently estimated to be 174 $MMTCO_2e$.

In 2007, the California Senate passed Senate Bill (SB) 97, requiring the Governor's Office of Planning and Research (OPR) to develop draft CEQA guidelines for the mitigation of GHG emissions and the effects of GHG emissions. In response to SB 97, the OPR proposed amendments to the CEQA guidelines in April 2009 that would provide guidance to California public agencies for analyzing and mitigating the effects of GHGs. In particular, the amendments proposed two new questions related to GHG impacts to the CEQA guidelines Appendix G Checklist, as well as additional questions on deforestation, energy conservation, and traffic impacts related to increased vehicle trips.

The Climate Change Scoping Plan, approved by the CARB on December 12, 2008, to fulfill Section 38561 of AB 32, is the state's roadmap to reach GHG reduction goals. The measures in the Scoping Plan will be in effect by 2012. Developed by CARB in conjunction with the CAT, the plan outlines a number of key strategies to reduce GHG

emissions by approximately 42 $MMTCO_2e$ by 2020 (about 25% of the estimated reductions needed by 2020). Due to expected growth in population and energy use, the emissions reduction target is approximately 30 percent below business as usual by the year 2020. The recommended early action measures include encouraging a low carbon fuel standard, landfill methane capture, reductions from mobile air conditioning, semiconductor reductions, SF_6 reductions, reductions of high GWP consumer products, a heavy-duty vehicles measure, a tire pressure program, and others.

On March 18, 2010, the CEQA guidelines mentioned above were amended to include a requirement for the quantification and mitigation of GHG emissions.

Some of the most important sections of the amendments are:

- Section 15064: The amendments require a lead agency make a "good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project." The agency may use a quantitative or qualitative analysis. (§ 15064.4(a).) This is a change from the originally proposed amendments, which omitted the reference to "scientific or factual data." The guidelines provide a list of factors to be considered in assessing the significance of the impact from GHG emissions, including increases or reductions in GHG caused by the project, the applicable thresholds, and the project's compliance with local, regional, or statewide GHG reduction plans (§ 15064.4(b)).
- Section 15093: The statement of overriding considerations may consider the region-wide or statewide environmental benefits.
- Section 15125: An EIR must discuss any inconsistencies between the proposed project and regional blueprint plans and plans for GHG emission reduction.
- Section 15126.4: Mitigation measures may include measures in an existing plan or mitigation program, implementation of project features, offsets, or GHG sequestration. Mitigation in a plan may include project-specific mitigation.
- Section 15183: Projects may tier from programmatic-level GHG emissions analysis and mitigation. Section 15183 details what a GHG Emission Reduction Plan should contain. A later project may use the plan for its cumulative impacts analysis.
- Appendix G: "GHG" was added to the list of categories. Transportation and Traffic was modified to expand congestion analysis beyond level of service and remove reference to parking.

Nevada

The Nevada Department of Environmental Protection (NDEP) is the primary administrator of air quality rules and regulations at the state level. Thus, the NDEP is responsible for preparing and submitting the SIP to the U.S. EPA. However, air quality administration in Clark and Washoe counties has been delegated to the local county government and air districts. NDEP uses air quality management plans prepared by these county air quality districts during SIP development.

3.3.2.3 Local

Mojave Desert Air Basin (Desert Portion of San Bernardino County, California)

The Mojave Desert Air Quality Management District (MDAQMD) is the administrator of air pollution rules and regulations within the portion of the Mojave Desert Air Basin that includes the desert portion of San Bernardino County and the far eastern end of Riverside County. The MDAQMD is also responsible for issuing stationary source air permits, developing emissions inventories and local air quality plans, maintaining air quality monitoring stations, and reviewing air quality environmental documents required by CEQA.

Fugitive Dust Control

MDAQMD Rule 403.2 outlines fugitive dust control requirements applicable for the Mojave Desert Planning Area. The dust control requirements include:

- Using periodic watering for short-term stabilization of disturbed surface areas
- Performing reasonable precautions to prevent trackout onto paved surfaces
- Covering loaded haul vehicles while operating on publicly maintained paved surfaces
- Stabilizing site surfaces upon completion of grading
- Cleaning up trackout or spills on publicly maintained paved surfaces within 24 hours
- Reducing non-essential earth-moving activity under high wind conditions.

Additionally, the following requirements are applicable to construction/demolition sources disturbing 100 or more acres:

- Preparing and submitting to MDAQMD, prior to commencing earth-moving activity, a dust control plan that describes all applicable dust control measures that will be implemented at the project
- Preparing and submitting to MDAQMD stabilized access route(s)
- Maintaining natural topography to the extent possible
- Constructing parking lots and paved roads, where feasible
- Constructing upwind portions of project first, where feasible

Clark County, Nevada

The Clark County Department of Air Quality and Environmental Management (CC-DAQEM) is the administrator of air pollution rules and regulations within Clark County, Nevada. The CC-DAQEM is also responsible for issuing stationary source air permits, developing emissions inventories and local air quality plans, and maintaining air quality monitoring stations.

Fugitive Dust Control

Clark County Rule Section 94 outlines permitting and dust control for construction activities. Under this rule, a dust control permit is required from the CC-DAQEM prior to the start of large construction projects. A dust mitigation plan is required as part of the application for a dust permit.

3.3.3 Impact Analysis

This section defines the methodology used to evaluate impacts for air quality and GHGs, including CEQA impact criteria. The definitions are followed by an analysis of each alternative, including a joint CEQA/NEPA analysis of impacts. At the conclusion of the discussion is a NEPA impact summary statement and CEQA impact determinations. For mitigation measures, refer to Section 3.3.4.

3.3.3.1 NEPA Impact Criteria

The NEPA analysis determines whether direct or indirect effects to air quality would result from the project, and explains the significance of those effects in the project area (40 CFR 1502.16). Significance is defined by Council on Environmental Quality regulations and requires consideration of the context and intensity of the change that would be

introduced by the project (40 CFR 1508.27). Impacts are to be discussed in proportion to their significance (40 CFR 1502.2[b]). To facilitate comparison of alternatives, the significance of environmental changes is described in terms of the temporal scale, spatial extent, and intensity.

This document uses the following criteria to evaluate air quality impacts as part of the NEPA analysis:

a. conflict with or obstruct implementation of the applicable air quality plan;

b. violate any ambient air quality standard when added to the local background; increase the number or frequency of violations; contribute substantially to an existing or projected air quality violation; or

c. expose sensitive receptors to substantial pollutant concentrations.

3.3.3.2 CEQA Impact Criteria

Under CEQA, the proposed project would have a significant impact if it would:

a. conflict with or obstruct implementation of the applicable air quality plan;

b. violate any ambient air quality standard when added to the local background; increase the number or frequency of violations; contribute substantially to an existing or projected air quality violation;

c. result in a cumulatively considerable net increase of any criteria pollutant for which the proposed project region is nonattainment under an applicable ambient air quality standard;

d. expose sensitive receptors to substantial pollutant concentrations;

e. create objectionable odors affecting a substantial number of people;

f. generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment;

g. conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

MDAQMD has adopted emission thresholds of significance for construction and operational emissions to help lead agencies analyze the significance of project-related emissions. These thresholds are shown in Table 3.3-3.

Table 3.3-3 MDAQMD Significant Emission Thresholds

Criteria Pollutant	Annual Threshold (tons)	Daily Threshold (lbs)
CO	100	548
NO_x	25	137
VOCs	25	137
SO_2	25	137
PM_{10}	15	82
$PM_{2.5}$	15	82
H_2S	10	54
Lead	0.6	3

Source: SCE 2009
Key:
CO = carbon monoxide
H_2S = hydrogen sulfide
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter with a diameter of 2.5 micrometers or less
PM_{10} = particulate matter with a diameter of 10 micrometers or less
SO_2 = sulfur dioxide
VOCs = volatile organic compounds

The MDAQMD has not adopted any GHG significance threshold in response to AB 32. At this time, no mandatory GHG regulations or finalized agency CEQA thresholds of significance apply to this project. In the absence of an established CEQA threshold of significance, CARB's Mandatory GHG Reporting program may be used to determine whether or not a project's emissions of GHGs may be considered significant. With the passing of AB 32, CARB has been mandated to implement a regulatory program applicable to key sectors and facilities with significant combustion sources. CARB has set the facilities reporting threshold as 25,000 metric tons or more per year for most sources.

In October 2008, CARB presented a Preliminary Draft Staff Proposal with an example threshold of 7,000 $MTCO_2e$ per year for operational emissions (excluding transportation-related emissions) from industrial projects (CARB 2008). To date, CARB has not adopted this threshold or proposed alternative thresholds. In December 2008, the South Coast Air Quality Management District (SCAQMD) adopted an interim threshold of 10,000 $MTCO_2e$ per year (operational emissions plus construction emissions amortized over 30 years) for "industrial" projects for which the SCAQMD is the lead agency, and it is developing guidelines for projects for which other agencies are the lead.

To assess the significance of the proposed project's GHG emissions, the CPUC will apply the SCAQMD significance threshold of 10,000 $MTCO_2e$ per year, including all operational emissions and the construction emissions averaged over 30 years for this project. In the absence of a rulemaking to establish a GHG emission threshold of significance to be applied uniformly throughout the state, the CPUC is assessing the impacts of GHG emissions on a case-by-case basis. In areas of the state in which the local air pollution control district or air quality management district has not adopted a threshold of significance, the CPUC will consider applying a threshold that has been adopted by CARB or another air pollution control district or air quality management district. In this instance, the CPUC is using the SCAQMD threshold because CARB has yet to adopt a threshold, and the SCAQMD threshold was adopted after rigorous public vetting, and, at the time of writing, it is the only air district to adopt an emission-based threshold.

The SCAQMD developed its interim significance threshold for GHGs from stationary sources through a robust stakeholder working group process, which included staff from OPR, CARB, and the Office of the Attorney General. The working group provided input to staff at seven public meetings. The numerical threshold SCAQMD established is 10,000 $MTCO_2e$ per year, which corresponds to a threshold that captures 90 percent of stationary source GHG emissions. SCAQMD adopted the 90 percent emission capture rate as a reasonable cut-off point, based on staff estimates that the emissions from projects that will not exceed this threshold would account for slightly less than 1 percent of the future statewide GHG emissions target.

Use of the SCAQMD threshold is an appropriate tool in the CPUC's project-by-project analysis. After careful consideration, the CPUC finds that this threshold is appropriate for this project at this time. The following analysis describes the estimated emissions associated with the construction and operation of the proposed project and the significance of this impact.

3.3.3.3 Methodology

To assess the potential air quality impacts associated with the project according to the significance criteria discussed above, the potential air pollutant emissions from the construction phase and the operational phase (including maintenance activities) of the project were evaluated. As applicable, the project-related emissions were compared with appropriate significance thresholds. In addition, the proximity of emission sources to potential receptors was determined.

Emissions of criteria pollutants and GHGs were estimated using data on vehicle/equipment operation and published emission factors. For fugitive dust sources, $PM_{2.5}$ emissions were assumed to be equivalent to 10 percent of PM_{10} emissions. In addition, controlled fugitive emissions were assumed to be 50 percent of uncontrolled fugitive emissions based on the use of dust suppression required by local agencies (water truck for unpaved roads). Most emissions of GHGs were derived based on estimated equipment types and run-time, although additional estimates

for worker commute and operational fugitive emissions of SF_6 were estimated based on applicant-provided information. See Appendix D for detailed air quality calculations.

3.3.3.4 Applicant Proposed Measures

The applicant has not proposed any measures related to air quality or air emission reduction for the proposed project beyond what is required by applicable regulations.

3.3.3.5 Proposed Project / Proposed Action

The project has the potential for air quality impacts during construction, ongoing operation, and maintenance of the proposed project components.

Construction

Air pollutant emissions would be generated during various activities associated with the project segments. Construction of the EITP would include removal of existing conductor, towers, foundations, and wood poles; installation of LST foundations; and assembly, hauling, and restoration activities. Construction at the Ivanpah Substation would involve grading, civil, and electrical phases. Installation of the telecommunications line would include tower work and line stringing. Air pollutant emissions would be generated during each construction phase from engine exhaust of onsite construction equipment and on-road vehicles. Onsite earthmoving activities and vehicle travel on local/access roads would generate fugitive dust.

Due to the linear nature of a transmission/telecommunications line, the numerous construction activities would occur at different locations spread out over the length of the proposed line. Thus, it is expected that construction equipment use would be spread out over a wide geographical area. The various construction activities could occur either simultaneously or at different times. The overall length of project construction is estimated at approximately 19 months. Depending on the project schedule, the level of construction activity is expected to be highly variable.

The estimated total criteria air pollutant emissions for all construction activities are presented in Table 3.3-4. A comparison of emissions expected in the MDAQMD (San Bernardino County, California) to the corresponding MDAQMD significance thresholds is presented in Table 3.3-5. Based on these estimates, the primary source of CO, NO_x, VOC, and SO_2 emissions would be non-road diesel construction equipment. It is assumed that most PM_{10} and $PM_{2.5}$ would be fugitive dust generated by vehicle traffic on unpaved roads. In general, construction emissions would be spread out over a wide geographic area.

The estimated average daily criteria pollutant emission rate for construction activities is presented in Table 3.3-6. This table also includes the daily MDAQMD significance thresholds. The average daily construction emission rates are based on the assumption that construction activities would occur concurrently and that equipment for each activity would be operating on the same day.

Effect on Implementation of Applicable Air Quality Plan

Construction activities related to the project would not conflict with or obstruct implementation of California or Nevada SIPs. These plans outline the long-term strategies for regional air quality compliance with NAAQS and state/local ambient air quality standards. The state emission inventories, as part of the SIPs, include fugitive dust and emissions from off-road equipment such as construction equipment. The emissions associated with project construction would be temporary and would be only a very small fraction of the regional emissions. No long-term effects associated with operation and maintenance of the proposed project would occur because periodic inspections would be the only activities that would generate emissions, and the emissions would be negligible.

Table 3.3-4 Total Project Construction Emissions

Location	Construction Activity	Total Emissions (tons)					
		CO	NO_x	VOCs	SO_2	PM_{10}	$PM_{2.5}$
San Bernardino County, California (MDAQMD)	Existing 115-kV Line Removal	0.28	0.44	0.06	0.0006	2.6	0.56
	Ivanpah Substation Construction	3.8	10	1.1	0.01	4.0	1.0
	220-kV Eldorado–Ivanpah Transmission Line Installation	4.5	8.1	0.96	0.04	8.0	1.9
	33-kV Distribution Line Installation	0.05	0.10	0.01	0.0001	0.11	0.02
	Telecommunication Line Installation	0.32	0.61	0.07	0.0009	0.95	0.21
	Total	9.0	19	2.2	0.05	16	3.7
	First 12-Month Period	*5.7*	*12*	*1.4*	*0.03*	*10*	*2.4*
	Second 12-Month Period[b]	*3.3*	*7.1*	*0.8*	*0.02*	*5.8*	*1.4*
Clark County, Nevada	220-kV Eldorado-Ivanpah Transmission Line Installation	18	32	3.8	0.16	32	7.8
	Telecommunication Line Installation	1.3	2.4	0.28	0.004	3.8	0.83
	Replacement of Overhead Ground Wire on Eldorado–Lugo 500-kV Line	2.5	4.3	0.51	0.05	4.7	1.1
	Total	22	39	4.6	0.22	41	10
	First 12-Month Period	*14*	*25*	*2.9*	*0.14*	*26*	*6.1*
	Second 12-Month Period[b]	*8.0*	*14*	*1.7*	*0.08*	*15*	*3.6*
Total Project Area[a]	Ivanpah Substation Construction	3.8	10	1.1	0.01	4.0	1.0
	220-kV Eldorado–Ivanpah Transmission Line Installation	22	40	4.8	0.20	40	9.7
	Existing 115-kV Line Removal	0.28	0.44	0.06	0.001	2.6	0.56
	33-kV Distribution Line Installation	0.05	0.10	0.01	0.0001	0.11	0.02
	Telecommunication Line Installation	1.6	3.0	0.36	0.004	4.7	1.0
	Replacement of Overhead Ground Wire on Eldorado–Lugo 500-kV Line	2.5	4.3	0.51	0.05	4.7	1.1
	Total	31	58	6.8	0.27	56	13
	First 12-Month Period	*19*	*37*	*4.3*	*0.17*	*36*	*8.5*
	Second 12-Month Period[b]	*11*	*21*	*2.5*	*0.10*	*21*	*5.0*

Notes:
[a]Includes location of all projects in San Bernardino County, California, and Clark County, Nevada.
[b]Approximately 9 months of construction is anticipated for second 12-month period.

Key:
CO = carbon monoxide
kV = kilovolt
MDAQMD = Mojave Desert Air Quality Management District
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter with a diameter of 2.5 micrometers or less
PM_{10} = particulate matter with a diameter of 10 micrometers or less
SO_2 = sulfur dioxide
VOCs = volatile organic compounds

Table 3.3-5 Comparison of Annual Project Emissions in San Bernardino County, California, to MDAQMD Significance Thresholds

Air Pollutant	Annual Project Emissions in San Bernardino County, California (MDAQMD) (tons/yr)		MDAQMD Annual Emission Significance Threshold (tons/yr)
	First 12-Month Period	Second 12-Month Period[a]	
CO	5.5	3.2	100
NO_x	12	7.0	25
VOCs	1.4	0.8	25
SO_2	0.03	0.02	25
PM_{10}	10	5.8	15
$PM_{2.5}$	2.4	1.4	15

Note:
[a]Approximately 9 months of construction is anticipated for second 12-month period.

Key:
CO = carbon monoxide
MDAQMD = Mojave Desert Air Quality Management District
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter with a diameter of 2.5 micrometers or less
PM_{10} = particulate matter with a diameter of 10 micrometers or less
SO_2 = sulfur dioxide
VOCs = volatile organic compounds

Table 3.3-6 Daily Project Construction Emissions

Location	Construction Activity	Average Daily Emissions[a] (lbs/day)					
		CO	NO_x	VOCs	SO_2	PM_{10}	$PM_{2.5}$
San Bernardino County, California (MDAQMD)	Existing 115-kV Line Removal	17	26	3.3	0.04	153	33
	Ivanpah Substation Construction	47	122	14	0.1	50	13
	220-kV Eldorado–Ivanpah Transmission Line Installation	77	138	16	0.7	137	33
	33-kV Distribution Line Installation	12	25	3	0.04	27	6
	Telecommunication Line Installation	11	20	2	0.03	34	9
	Combined Total	*164*	*331*	*39*	*0.9*	*401*	*94*
	MDAQMD Daily Emission Significance Thresholds	*548*	*137*	*137*	*137*	*82*	*82*

Table 3.3-6 Daily Project Construction Emissions

Location	Construction Activity	Average Daily Emissions[a] (lbs/day)					
		CO	NO_x	VOCs	SO_2	PM_{10}	$PM_{2.5}$
Clark County, Nevada	220-kV Eldorado–Ivanpah Transmission Line Installation	77	138	16	0.7	137	33
	Telecommunication Line Installation	11	20	2	0.03	34	9
	Replacement of Wire on Eldorado–Lugo 500-kV Line	25	43	5	0.5	47	11
	Combined Total	*113*	*201*	*23*	*1.2*	*218*	*53*

Note:
[a]Based on the conservative assumption that all construction equipment operates concurrently.

Key:
CO = carbon monoxide
MDAQMD = Mojave Desert Air Quality Management District
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter with a diameter of 2.5 micrometers or less
PM_{10} = particulate matter with a diameter of 10 micrometers or less
SO_2 = sulfur dioxide
VOCs = volatile organic compounds

Temporary Ambient Air Quality Impacts Caused by Construction Activities

Emissions generated from construction activities are anticipated to cause temporary increases in ambient air pollutant concentrations along the route of construction activities and the access roads used by project vehicles. Since the construction activities would be transient and would impact specific locations for only limited durations, long-term impacts would not occur. Further, the majority of the proposed construction would be carried out in isolated areas of the desert that are not close to populated areas. As stated earlier, construction activity would also not be concentrated in a single location but spread out over a wide geographic area. However, although the applicant would implement mitigation measures (MM AIR-1, use of low-emission equipment, and MM AIR-2, enhanced fugitive dust controls to reduce emissions), short-term impacts to ambient air quality could still occur.

Temporary Emission Increases of NO_x, VOCs, and PM_{10} during Construction

Project construction would occur in an area designated nonattainment for ozone and PM_{10}. The estimates of average daily emissions of PM_{10} and NO_x from project construction activities exceed MDAQMD daily significance thresholds (see Table 3.3-6). Comparison of average daily emissions to significance thresholds was based on the conservative assumption of daily equipment use. However, construction activities would be transient and would impact specific locations for only limited durations; therefore, long-term impacts would not occur. Mitigation measures would be implemented (MM AIR-1, use of low-emission equipment, and MM AIR-2, enhanced fugitive dust controls) to reduce short-term impacts. However, these mitigation measures are not expected to reduce PM_{10} and NO_x emissions from construction activities to below MDAQMD daily significance thresholds.

Temporarily Expose Sensitive Receptors to Increased Pollutant Concentrations

Diesel particulate emissions would be part of the exhaust from project construction equipment and on-road vehicles. The only receptor identified as being close to the proposed project construction area is the Desert Oasis Apartment Complex, which could be exposed to short-term increased pollutant concentrations. The project would not be near schools, day care centers, hospitals, or other sensitive receptors. Given that construction activities would be transient and would impact specific locations for only limited durations, long-term impacts would not occur.

Temporarily Cause Odors Due to Fuel Combustion

Exhaust from construction equipment might temporarily create odors from the combustion of fuel. However, the level of emissions would likely not cause a perceptible odor to a substantial number of people. Any odors that were

perceptible would be temporary during construction activities. Vehicle emissions during project operation would be minimal, so no objectionable odors are expected.

Generate GHG Emissions

The estimated total GHG emissions from all construction activities is approximately 7,000 $MTCO_2e$. Amortized over 30 years, the annual GHG emissions from construction would be approximately 232 MTCO2e per year (see Table 3.3-7).

Table 3.3-7 Summary of GHG Emissions from Construction and Operation

Greenhouse Gas	Annual Direct Emissions (metric tons)		Global Warming Potential	Annual Carbon Equivalent Emissions ($MTCO_2e$)	
	Construction	Operation[a,b]		Construction	Operation
CO_2	6,950	18	1	6,950	18
SF_6	–	0.0073	23,900	–	176
			~~sub~~Total	6,950	194
Annual ~~Total~~ Project GHG Emissions Construction (6,950 $MTCO_2e$ amortized over 30 years) Operation TOTAL~~, Max Yearly~~				232 $MTCO_2e$/yr 194 $MTCO_2e$/yr 426 $MTCO_2e$/yr ~~7,144~~	
CPUC-Applied SCAQMD Threshold for Annual GHG Emissions				10,000 $MTCO_2e$/yr	
Emissions do not exceed threshold LESS THAN SIGNIFICANT IMPACT					

Notes:
[a]Direct emissions of CO_2 estimated based on 100 vehicle miles traveled per day and 1.1 lbs CO_2/mile.
[b]Direct emissions of SF_6 estimated by assuming 1% leak rate from equipment storing 1,620 lbs of SF_6, which would equal 16.2 lbs/year.

Key:
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
SF_6 = sulfur hexafluoride

Operation & Maintenance

The emissions of criteria air pollutants during project operation would be primarily from maintenance vehicles used by workers to patrol the transmission lines and visit the substation. These operational/maintenance emissions would be negligible. It is assumed that most of the GHG emissions during project operation would result from potential leaks of SF_6 from substation/transmission equipment. Annual GHG emissions from the operational activities are estimated at approximately 190 $MTCO_2e$ (Table 3.3-7).

NEPA Summary

Construction activities related to the project would not conflict with or obstruct implementation of California or Nevada SIPs. The emissions associated with project construction would be temporary and would be only a very small fraction of the regional emissions. No long-term impacts associated with operation and maintenance would occur. Therefore, the proposed project would have a negligible effect on the implementation of an applicable air quality plan.

Emissions generated from construction activities would temporarily increase ambient air pollutant concentrations along the route of the transmission line and in the vicinity of access roads used by project vehicles. Construction emissions of $PM_{2.5}$, PM_{10}, and NO_X would temporarily exceed MDAQMD daily significant thresholds, even with the implementation of use of low-emission equipment (MM AIR-1) and enhanced fugitive dust controls (MM AIR-2). This would result in short-term, moderate impacts on ambient air quality.

Diesel particulate emissions would be part of the exhaust from project construction equipment and on-road vehicles. As discussed above, the Desert Oasis Apartment Complex is the only receptor, but the potential exposure of this receptor to emissions would be short term (approximately 2.5 weeks during construction). Therefore, the short-term exposure of sensitive receptors to increased pollutant concentrations from the proposed project would be minor.

Air pollutant emissions and resulting impacts during operation of the proposed project would be negligible.

CEQA Significance Determinations

IMPACT AIR-1: Conflict or Obstruct the Implementation of Applicable Air Quality Plan
Less than significant

Construction activities related to the project would not conflict with or obstruct implementation of the Mojave Desert Planning Area Air Quality Attainment Plan. The emissions associated with project construction would be temporary and would be a small fraction of the regional emission inventory included in the plan. No long-term impacts associated with operation and maintenance are anticipated for the proposed project. Therefore, the proposed project would have a less than significant impact on implementation of applicable air quality plans.

IMPACT AIR-2: Temporary Ambient Air Quality Impacts Caused by Construction Activities Would Violate or Contribute Substantially to an Air Quality Violation
~~Potentially s~~Significant

The estimated average daily emissions of $PM_{2.5}$, PM_{10}, and NO_X from project construction activities would exceed MDAQMD daily significance thresholds (see Table 3.3-6). The comparison of average daily emissions to significance thresholds was based on conservative assumptions about daily equipment use. The large majority of $PM_{2.5}$ and PM_{10} emissions are due to fugitive dust generated from onsite construction and vehicle travel on roads. Implementation of MM AIR-1, the use of low-emission equipment, and MM AIR-2, enhanced fugitive dust controls, would reduce potential impacts, but would not likely reduce emissions from construction activities to below the MDAQMD daily significance ~~significant~~ thresholds. Impacts would be limited to the duration of project construction; long-term and operational impacts would not occur. As average daily emissions of $PM_{2.5}$, PM_{10}, and NO_X are projected to exceed established thresholds, associated impacts ~~could~~ would be ~~potentially~~ significant during construction.

IMPACT AIR-3: Temporary Emission Increases of NO_x and PM_{10} during Construction Would Contribute to a Cumulatively Considerable Net Increase of a Criteria Pollutant in a Nonattainment Area
~~Potentially s~~Significant

Project construction would occur in an area designated nonattainment for ozone and PM_{10}. The estimates of average daily emissions of PM_{10} and NO_X from project construction activities exceed MDAQMD daily significance ~~significant~~ thresholds (see Table 3.3-6). The comparison of average daily emissions to significance thresholds was based on conservative assumptions about daily equipment use. The large majority of $PM_{2.5}$ and PM_{10} emissions are due to fugitive dust generated from onsite construction and vehicle travel on roads.

Mitigation measures MM AIR-1, the use of low-emission equipment, and MM AIR-2, enhanced fugitive dust controls, would be implemented to reduce potential impacts, but these mitigation measures would not likely reduce PM_{10} and NO_X emissions from construction activities to below the MDAQMD daily significant thresholds; therefore, the impact of temporary emissions from construction ~~is potentially~~ would be significant.

IMPACT AIR-4: Temporarily Expose Sensitive Receptors to Substantial Pollutant Concentrations
Less than significant

Diesel particulate emissions would be generated during project construction. The only receptor identified as being close to the proposed project construction area is the Desert Oasis Apartment Complex, where residents could be exposed to short-term increased pollutant concentrations. The project would not be located near schools, day care centers, hospitals, or other sensitive receptors. Given that construction activities would be transient and would impact specific locations for only limited durations, the impact of increased pollutant concentrations on sensitive receptors would be less than significant.

IMPACT AIR-5: Temporarily Create Objectionable Odors Due to Fuel Combustion that would Affect a Substantial Number of People
Less than significant

Odors created during construction from the combustion of fuel would likely not cause a perceptible odor to a substantial number of people. If perceptible, such impacts would be temporary and would be limited to the duration of the project construction period. Vehicle emissions during project operation would be minimal, so no objectionable odors are expected. Therefore, impacts associated with increased odors due to fuel combustion would be less than significant.

IMPACT AIR-6: Generate GHG Emissions That May Have a Significant Impact on the Environment
Less than significant

The project would cause an increase in GHG emissions. However, the amount of emissions from both project construction (estimated at 6,950 $MTCO_2e$) and operation (estimated at 194 $MTCO_2e$ per year) would be insignificant. Neither the state of California, nor the applicable air districts has officially adopted a GHG threshold of significance for CEQA. The purpose of establishing a threshold is to provide some guidance for determining if a project will have a significant impact on the environment. CPUC, as the lead agency, has the responsibility to assess the level at which the effects of the project would be significant. In order to use a conservative methodology, CPUC has elected to apply a significance threshold of 10,000 metric tonnes CO_2e per year~~, which corresponds to the lowest officially adopted GHG threshold in the state of California~~ (from SC-AQMD's Draft Guidance Document – Interim CEQA GHG Significance Threshold). As with other individual small projects (e.g., projects that emit less than 25,000 $MTCO_2e$ per year), the GHG emissions increases that would result under the project would not be expected to individually have a significant impact on global climate change. Therefore, the impact of the generation of GHG emissions would be less than significant.

Even though the generation of GHG emissions from the proposed project would be less than significant, the applicant would be required to follow and/or consider best management practices to reduce the potential for GHG emissions (see Mitigation Measure MM-AIR-3).

NO IMPACT. Conflict With Any Applicant Plan, Policy, or Regulation Aimed at Reduction of Greenhouse Gases. At this time, no mandatory GHG regulations or finalized agency guidelines apply to this project. In the absence of established state regulations addressing mitigation of impacts related to GHG emissions, OPR has issued guidance encouraging agencies to develop a regional approach (OPR 2009). MDAQMD has not issued any finalized guidance for GHG reporting or set any thresholds for CEQA analysis of GHG emissions. As there are no applicable regional policies or plans that address this type of project, the project does not conflict with any identified plans, policies, or regulations.

3.3.3.6 No Project / No Action Alternative

Under the No Project Alternative, the new double circuit transmission line would not be constructed. Thus, there would be no construction or operational emissions or air quality impacts.

3.3.3.7 Transmission Alternative Route A

Transmission Alternative Route A would vary from the proposed project route near the Eldorado Substation. The remainder of the EITP would be the same. The level of construction and operational activity for the entire route using Transmission Alternative Route A is expected to be similar to that of the proposed project route. Thus, the air quality and GHG impacts associated with this alternative would be similar to those discussed above for the proposed project.

Transmission Alternative Route A would have a negligible effect on the implementation of an applicable air quality plan. As with the proposed project, the total amount of the emissions generated during construction, even with implementation of emission equipment (MM AIR-1) and enhanced fugitive dust controls (MM AIR-2), would be sufficient to create short-term, moderate impacts to ambient air quality. The short-term exposure of sensitive receptors to increased pollutant concentrations from this alternative would be minor. The average daily emissions of $PM_{2.5}$, PM_{10}, and NO_X from construction activities would exceed MDAQMD daily significance thresholds; therefore, these short-term impacts would be potentially significant. The impact of increased pollutant concentrations on sensitive receptors would be less than significant. The impact of increased odors due to fuel combustion would be less than significant. The impact of the generation of GHG emissions would be less than significant. This alternative would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

3.3.3.8 Transmission Alternative Route B

Transmission Alternative Route B would vary the proposed project route near the Eldorado Substation. The remainder of the EITP would be the same. Although this alternative route is about 5.5 miles longer than the proposed route, the level of construction and operational activity associated with the entire route using Transmission Alternative Route B is expected to be similar to that of the proposed project route, as it would only impact an additional 24 acres. Assuming emissions impacts are in line with the additional length and area of impact, the emissions under this scenario could be approximately 5 percent above the emissions for the proposed project. Thus, the air quality and GHG impacts associated with this alternative would be similar to those associated with the project and discussed above for Transmission Alternative Route A.

3.3.3.9 Transmission Alternative Route C

Transmission Alternative Route C is a route variation near Primm. The remainder of the EITP would be the same. Although this alternative route is longer than the proposed route, the level of construction and operational activity associated with the entire route using Transmission Alternative Route C is expected to be similar to that of the proposed project route as it would only impact an additional 5.5 acres. Assuming emissions impacts are in line with the additional length and area of impact, the emissions under this scenario could be approximately 5 percent above the emissions of the proposed project. Thus, the air quality and GHG impacts associated with this alternative would be similar to those associated with the project and discussed above for Transmission Alternative Routes A and B.

3.3.3.10 Transmission Alternative Route D and Subalternative E

Transmission Alternative Route D and Subalternative E are route variations near Primm. The remainder of the EITP would be the same. The level of construction and operational activity associated with the entire route using Transmission Alternative Route D and Subalternative E is expected to be similar to that of the proposed project route.

Thus, the air quality and GHG impacts associated with this alternative would be similar to those associated with the project and discussed for Transmission Alternative Routes A, B, and C above.

3.3.3.11 Telecommunication Alternative (Golf Course)

This alternative would deviate from the proposed project telecommunication route outside the town of Nipton, California. This alternative would not require the proposed microwave tower. The telecommunications line would continue along the north side of Nipton Road in a new underground duct for approximately 10 miles. The telecommunications line would then be underbuilt on existing distribution lines for approximately 10 miles to the proposed Ivanpah Section with the exception of a segment that would be installed in a new underground duct beneath the Primm Valley Golf Course.

The level of construction and operational activity associated with this alternative telecommunications route are expected to be similar to that of the proposed project route. Thus, the air quality and GHG impacts associated with this alternative would be similar to those associated with the project and discussed above for Transmission Alternative Routes A, B, C, and D and Subalternative E.

3.3.3.12 Telecommunication Alternative (Mountain Pass)

This alternative would deviate from the proposed project telecommunication route outside the town of Nipton, California. This alternative would not require the proposed microwave tower. The telecommunications line would continue along the north side of Nipton Road in a new underground duct for approximately 10 miles. The telecommunications line would then be underbuilt on existing distribution lines for approximately 15 miles to the west of the town of Mountain Pass and north of the existing Mountain Pass Substation to the proposed Ivanpah Substation.

The level of construction and operational activity associated with this alternative telecommunications route are expected to be similar to that of the proposed project route. Thus, the air quality and GHG impacts associated with this alternative would be similar to those associated with the project and discussed for Transmission Alternative Routes A, B, C, and D, Subalternative E, and the Golf Course Telecommunication Alternative.

3.3.4 Mitigation Measures

The following mitigation measures are proposed to reduce the air quality impacts associated with the proposed project:

MM AIR-1: Low-emission Construction Equipment. All construction equipment with a rating between 100 and 750 horsepower (hp) will be required to use engines compliant with U.S. EPA Tier 2 non-road engine standards. In addition, all off-road and portable construction diesel engines not registered under the CARB Statewide Portable Equipment Registration Program that have a rating of 50 hp or more will meet, at a minimum, the Tier 2 California non-road engine standards unless that engine is not available for a particular item of equipment. In the event a Tier 2 engine is not available for any off-road engine larger than 100 hp, that engine will be equipped with a Tier 1 engine. The applicant will substitute small electric-powered equipment for diesel- and gasoline-powered construction equipment where feasible. The applicant will maintain construction equipment according to manufacturing specifications and use low-emission equipment.

MM AIR-2: Enhanced Dust Control Measures. In addition to the dust control requirements by MDAQMD and CC-DAQEM, the following measures will be implemented for mitigation:

- Frequent watering or stabilization of excavations, spoils, access roads, storage piles, and other sources of fugitive dust (parking areas, staging areas, other) if construction activity causes persistent visible emissions of fugitive dust beyond the work area

- Pre-watering of soils prior to clearing and trenching
- Pre-moistening of, prior to transport, import and export dirt, sand, or loose materials
- Dedication of water truck or high-capacity hose to any soil screening operations
- Minimization of drop height of material through screening equipment
- Reduction of the amount of disturbed area where possible
- Planting of vegetative ground cover in disturbed areas ~~within 21 days~~ after construction activities have ceased within a time period that is consistent with the Project's Reclamation Plan as described in MM BIO-2.

MM AIR-3: Best Management Practices for GHG Reduction. The applicant would be required to enforce and follow limits for idling time for commercial vehicles, including delivery and construction vehicles. The applicant would be also be required to consider the following best management practices to reduce the potential for GHG emissions:

- Joining U.S. EPA's SF_6 Emission Reduction Partnership for Electric Power Systems (http://www.epa.gov/highgwp/electricpower-sf6/basic.html);
- Performing annual inspections and estimation of SF_6 emissions using an emission inventory protocol;
- For equipment that would contain SF_6, purchasing only new equipment that meets International Council on Large Electric Systems (CIGRE) standards for leak rates;
- Implementing SF_6 recovery and recycling;
- Ensuring that only knowledgeable personnel handle SF_6; and
- Providing a vanpool for construction workers.

3.3.5 Whole of the Action / Cumulative Action

Below is a brief summary of information related to air quality and GHGs in the BLM's ISEGS Final Environmental Impact Statement (FEIS) and the California Energy Commission's (CEC's) Final Staff Assessment (FSA) and Addendum. This section focuses on differences in the ISEGS setting and methodology compared with the setting and methodology discussed above for the EITP. This section also discloses any additional impacts or mitigation imposed by the BLM and CEC for ISEGS.

3.3.5.1 ISEGS Setting

Since the ISEGS project is located in the Southern California Mojave Desert close to the California-Nevada border, the environmental setting is very similar to that of the EITP. The area is located within the MDAB, and is designated as moderate non-attainment for the state ozone standard, and the state and federal PM_{10} standards. The area is classified as being in attainment for the federal ozone standard, and as unclassified and/or attainment for state and federal CO, lead, NO_2, and $PM_{2.5}$, SO_2 standards.

Applicable Laws, Regulations, and Standards

Due to the variation in project components and location between EITP and ISEGS, there would be differences in the laws, regulations, and standards that would apply to ISEGS compared to those listed above for EITP (see Table 3.3-8). Since ISEGS would be developed entirely within California on BLM land, the Nevada regulations associated with the EITP would not apply. ISEGS project components and operational features would also trigger additional laws,

regulations, and standards. The regulatory authority responsible for air quality is the MDAQMD. Table 3.3-8 provides an overview of the laws, regulations, and standards applicable to the ISEGS project.

Table 3.3-8 Laws, Regulations, and Standards Applicable to the ISEGS Project

Law, Regulation, or Standard	Description	Project Component
Federal		
40 CFR Part 52	Nonattainment NSR requires a permit, BACT, and offsets. Permitting and enforcement is delegated to MDAQMD. PSD requires major sources or major modifications to major sources to obtain permits for attainment pollutants. The ISEGS project is a new source that has a rule-listed emission source; thus, the PSD trigger levels are 100 tons per year for NO_X, VOCs, SO_2, $PM_{2.5}$, and CO. The ISEGS project's proposed emissions are below NSR and PSD applicability thresholds.	Operations
40 CFR Part 60	NSPS, Subpart D, Standards of Performance for Electricity Steam Generation Units. Establishes emission standards and monitoring/recordkeeping requirements for units with greater than 250 MM BTU/hr heat input. Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. Establishes emission standards for these engines, which include emergency fire water pump engines.	Operations
State		
HSC Section 40910-40930	Permitting of source needs to be consistent with CARB-approved Clean Air Plans.	Operations
HSC Section 41700	Restricts emissions that would cause nuisance or injury.	Operations
CCR Section 93115	Airborne Toxics Control Measure for Stationary Compression Ignition Engines. Limits the types of fuels allowed, establishes maximum emission rates, establishes recordkeeping requirements on stationary compression ignition engines including emergency fire water pump engines.	Operations
Local		
Rule 404 Particulate Matter – Concentration	Limits the particulate matter concentration from stationary source exhausts.	Operations
Rule 900 Standard of Performance for New Stationary Source	Incorporates the Federal NSPS (40 CFR 60) rules by reference.	Operations
Regulation XII – Federal Operating Permits	Requires that new or modified major facilities or facilities that trigger NSPS, Acid Rain or other federal air quality programs obtain a Title V federal operating permit.	Operations
Rule 1210 – Acid Rain	Requires that facilities subject to the federal Acid Rain program obtain permits and comply with emissions and monitoring provisions.	Operations
Rule 1303 – New Source Review	Specifies BACT/offsets technology and requirements for any new emissions unit that has potential to emit any affected pollutants.	Operations
Rule 1306 – Electric Energy Generating Facilities	Describes actions to be taken for permitting of power plants that are within the jurisdiction of the California Energy Commission.	Operations

Key:
BACT = Best Available Control Technology
CARB = California Air Resource Board
CCR = California Code of Regulations
CFR = Code of Federal Regulations
CO = carbon monoxide
HSC = Health and Safety Code
MDAQMD = Mojave Desert Air Quality Management District
MM BTU/hr = 1 million British Thermal Units per hour
NO_X = nitrogen oxides

Table 3.3-8 Laws, Regulations, and Standards Applicable to the ISEGS Project

Law, Regulation, or Standard	Description	Project Component

NSPS = New Source Performance Standards
$PM_{2.5}$ = particulate matter with a diameter of 2.5 micrometers or less
PSD = Prevention of Significant Deterioration
SO_2 = sulfur dioxide
VOC = volatile organic compound

3.3.5.2 ISEGS Methodology

CEC's FSA Methodology

The methodology for analyzing impacts for the ISEGS project was similar to that used for the EITP. CEC staff primarily used two CEQA significance criteria to evaluate the ISEGS project. First, all project emissions of nonattainment criteria pollutants and their precursors (NO_X, VOC, PM_{10}, and SO_2) were considered CEQA significant cumulative impacts that must be mitigated. Second, any AAQS violation or any contribution to any AAQS violation caused by any project emissions was considered CEQA significant and mitigation was required. BACT would be applied to both the onsite stationary and the non-stationary sources for the ISEGS project. For the NEPA analysis, the Prevention of Significant Deterioration (PSD) threshold was considered in addition to the NAAQS and general conformity considered above for EITP. Also, the emissions from the proposed project, both stationary source and onsite mobile source, were analyzed for ISEGS using air dispersion models to determine the probable impacts at ground level.

Furthermore, the impact of the GHG emissions from a power plant's operation should be analyzed in the context of applicable GHG laws and policies, such as AB 32. As this part of the CEC's Final Decision, the following was taken into consideration:

- Whether ISEGS GHG construction emissions will have significant impacts;
- Whether ISEGS operation will be consistent with the state's GHG policies and will help achieve the state's GHG goals by causing a decrease in overall electricity system GHG emissions.

BLM's FEIS Methodology

Under NEPA, the BLM's FEIS assessed the significance of ISEGS's impact on air quality and GHGs against NEPA-implementing regulations at 40 CFR 1508.27 (see Section 3.12.3.1). Specifically, the BLM's FEIS evaluated whether the ISEGS project would result in impacts related to the following:

BLM assessed three kinds of primary and secondary impacts: construction, operational, and cumulative. (Primary impacts potentially result from facility emissions of NOx, SOx, CO, and $PM_{10/2.5}$. Secondary impacts result from air contaminants that are not directly emitted by the facility but formed through reactions in the atmosphere that result in ozone, sulfate, nitrate, and $PM_{10}/PM_{2.5}$.) Construction impacts result from the emissions occurring during site preparation and construction of the project. Operational impacts result from the emissions of the proposed project during normal operation, which includes all of the onsite auxiliary equipment (boilers, cooling tower, fire pump engine, etc.) and the maintenance vehicle emissions.

The NEPA air quality analysis considers the following three regulatory thresholds:

- General Conformity applicability thresholds, which for this project is limited to 100 tons per year of PM_{10} and PM_{10} precursors (NOx and SOx). This regulatory threshold applies to both project construction and operation emissions.
- PSD permit applicability thresholds, which for this project as a listed major source category is 100 tons per year for the criteria pollutants. This regulatory threshold only applies to project operation and only applies to direct project emissions, and does not apply to secondary emissions, such as fugitive dust emissions.
- Project would cause air quality impacts in exceedance of the National Ambient Air Quality Standards (NAAQS).

If the project were to exceed either of the first two of these regulatory thresholds then there could be direct, adverse impacts which would require a further refined impact and mitigation analysis in order to demonstrate that no impacts would occur based on the potential to cause exceedances of the NAAQS.

While the emissions are the actual mass of pollutants emitted from the project, the impacts are the concentration of pollutants from the project that reach the ground level. When emissions are expelled at a high temperature and velocity through the relatively tall stack, the pollutants would be substantially diluted by the time they reach ground level. The emissions from the proposed project, both stationary source and onsite mobile source emissions, are analyzed through the use of air dispersion models to determine the probable impacts at ground level.

Air dispersion models provide a means of predicting the location and ground level magnitude of the impacts of a new emissions source. These models consist of several complex series of mathematical equations, which are repeatedly calculated by a computer for many ambient conditions to provide theoretical maximum offsite pollutant concentrations short-term (1-hour, 3-hour, 8-hour, and 24-hour) and annual periods. The model results are generally described as maximum concentrations, often described as a unit of mass per volume of air, such as µg/m3.

The applicant has used the EPA-approved ARMS/EPA Regulatory Model (AERMOD version 07026) air dispersion model to estimate the direct impacts of the project's NOx, PM_{10}, CO, and SOx emissions resulting from project construction and operation. Additionally, boiler emission fumigation impacts during inversion breakup conditions were determined using the EPA-approved SCREEN3 model.

BLM revised the background concentrations provided by the applicant, replacing them with the available highest ambient background concentrations for the last three years from representative monitoring sites. BLM added the modeled impacts to these background concentrations, then compared the results with the ambient air quality standards for each respective air contaminant to determine whether the project's emission impacts would cause a new violation of the ambient air quality standards or would contribute to an existing violation.

The inputs for the air dispersion models include stack information (exhaust flow rate, temperature, and stack dimensions), specific boiler emission data and meteorological data, such as wind speed, atmospheric conditions, and site elevation. For this project, the meteorological data used as inputs to the model included hourly wind speeds and directions measured at the Jean, Nevada, meteorological site during 2001 and 2002, which is the closest complete meteorological data source to the project site, and supplemented to fill missing data using the Nellis Air Force Base meteorological site. Concurrent upper air data from the Mercury Desert Rock Airport in Mercury, Nevada was also used.

Additionally, the applicant obtained hourly ozone and NO_2 ambient data from the Barstow monitoring station for 2001 and 2002 that was used in a more refined NO_2 impact modeling analysis using the Plume Volume Molar Ratio

Method (PVMRM), available with AERMOD that integrates the Ozone Limiting Method (OLM) with the downwind plume stoichiometry.

The impact of GHG emissions caused by this solar facility is characterized by considering how the power plant would affect the overall electricity system. The integrated electricity system depends on both non-fossil and fossil-fueled generation resources to provide energy and satisfy local capacity needs.

3.3.5.3 ISEGS Impacts

The CEC and BLM staff determined that construction, operation, and decommissioning of the ISEGS project could impact air quality and green house gas emissions. Where impacts were identified, the CEC and BLM staff proposed mitigation measures to reduce impacts to less than significant levels. The CEC and BLM have published the impacts discussed below related to air quality and green house gases for the ISEGS project.

CEC's FSA/DEIS / FSA Addendum / Final Decision Impact Conclusions

The CEC has published the following impacts related to air quality and green house gases for the ISEGS project in the FSA/DEIS, FSA Addendum, Final Decision, and Errata to FSA Addendum Air Quality Section. Section 3.12.5.4 contains the CEC- proposed Conditions of Certification mitigation measures for the ISEGS project.

Construction Impacts

The ISEGS Mitigated Ivanpah 3 would consist of three phases, with total construction duration of 40 months. Activities such as site preparation, construction, and installation of major equipment and structures would result in fugitive dust emissions and emissions from equipment exhausts. In addition, a small amount of hydrocarbon emissions may occur because of the temporary storage of petroleum fuel at the site. Air dispersion modeling was done to analyze the ground level impacts from all construction activities. Peak hourly, daily, and annual construction equipment exhaust and fugitive dust emissions were used to perform the modeling analysis. The modeled impacts from construction activities were added to the background concentrations to assess the impact from the project. The modeling results indicated that without adequate fugitive dust mitigation, the ISEGS Mitigated Ivanpah 3 project would have the potential to exceed the General Conformity PM_{10} applicability threshold during construction and operation, and could cause potential localized exceedances of the PM_{10} NAAQS during construction. Since the area is nonattainment for PM_{10}, mitigation measures AQ-SC1 through AQ-SC5 would be implemented to mitigate the potentially significant impacts. Mitigation measures AQ-SC1 through AQ-SC5 are described below in Section 3.3.5.4. The modeling analysis shows that, after implementation of the recommended fugitive dust mitigation measures, the project's construction would not cause violations of the ambient air quality standards. Therefore, no significant NEPA impacts would occur after implementation of the mitigation measures.

The construction activities from the ISEGS Mitigated Ivanpah 3 project would likely contribute to significant CEQA adverse PM_{10} and ozone impacts unless mitigation measures are implemented. Implementation of mitigation measures AQ-SC1 to AQ-SC5 would mitigate these potential impacts to less than significant.

To mitigate the impacts from the construction of the facility, the applicant has proposed to follow the mitigation measures from the SCAQMD CEQA guidelines. In addition to those, the FSA/DEIS indicated that the BLM and CEC have recommended the use of polymer based soil stabilizers, or equivalent, on the site's unpaved roads and inactive disturbed surfaces during construction.

The applicant provided a construction emissions estimate that CEC staff used to calculate greenhouse gas emissions for the entirety of the construction activities. The greenhouse gas emissions estimate for construction is approximately 17,779 $MTCO_2e$.

In order to limit vehicle emissions of both criteria pollutants and GHG during construction, ISEGS will use (1) operational measures, such as limiting vehicle idling time and shutting down equipment when not in use; (2) regular preventive maintenance to prevent emission increases due to vehicular engine problems; and (3) use of low-emitting diesel engines meeting federal emissions standards for construction equipment, whenever available. Control measures stated in the Final Decision to address criteria pollutant emissions would further minimize greenhouse gas emissions to the extent feasible. Also, the requirement that the owner use newer construction equipment will increase fuel efficiency and minimize tailpipe emissions (see Condition of Certification AQ-SC5.)

The CEC's Final Decision finds that the measures described above to directly and indirectly limit the emission of GHGs during the construction of ISEGS are in accordance with current best practices. The CEC therefore finds that the evidence shows that the GHG emissions from construction activities would not exceed the level of significance.

Operational Impacts

Operational emissions are expected from the boilers, fire pump, and emergency generators. As part of the Mitigated Ivanpah 3 proposal, the applicant is proposing to install larger steam turbine generators for the Ivanpah 1 and 2 plants. However, there are no proposed changes in the location, configuration, short-term hours of operation, or fuel usage for the emitting sources in the Ivanpah 1 and 2 power plants.

Air quality dispersion modeling using the U.S. EPA dispersion model AERMOD model indicated that, with the exception of the 1-hour NO_2 impacts, air quality impacts for all pollutants are reduced or are equivalent to the maximum modeled air quality impacts of the original configuration of the ISEGS project. The ISEGS Mitigated Ivanpah 3 project operation would not cause new violations of any NO_2, SO_2, $PM_{2.5}$ or CO ambient air quality standards, and therefore, the projects' direct operational NOx, SOx, $PM_{2.5}$ and CO emission impacts are not CEQA significant. Additional modeling analysis also indicated that the incremental increases in the 1-hour NO_2 impacts for the Mitigated Ivanpah 3 project would not create new exceedances of the state's 1-hour NO_2 ambient air quality standard. The results of the modeling analysis, as presented in CEC's FSA/DEIS (CEC 2009) and FSA Addendum (CEC 2010), are summarized in Table 3.3-9. The analysis did not include the new federal 1-hour NO_2 ambient air quality standard. This new standard is expressed as a 3-year average of the 98th percentile of the daily maximum 1-hour concentration (i.e., the 8th highest of daily highest 1-hour concentrations) and did not become effective until after publication of the CEC's FSA/DEIS and FSA Addendum. According to the CEC's FSA Addendum at the time of the analysis: "…(U.S. EPA) has not yet developed modeling software to generate the statistics in a form that can be used in a compliance demonstration. Therefore, the analyses described below do not include this project's impact on the new federal 1-hour NO_2 standard and the conclusions reached likewise do not include this impact…."

Table 3.3-9 Operation Emission Impacts for Mitigated Ivanpah 3 ISEGS Project

Pollutant	Avg. Period	Impacts[a] (µg/m^3)	Background (µg/m^3)	Total Impact (µg/m^3)	Standard (µg/m^3)	Percent of Standard
NO_2	1-hr	153.4	73.3	226.7	339	67%
	Annual	0.1	7.3	7.4	57	13%
PM_{10}	24-hr	3.2	96	99.2	50	198%
	Annual	0.5	12.7	13.2	20	66%
$PM_{2.5}$	24-hr	0.1	12.9	13.0	35	37%
	Annual	0.0	4.5	4.5	12	38%
CO	1-hr	282	4,025	4,307	23,000	19%
	8-hr	55	1,367	1,422	10,000	14%

Table 3.3-9 Operation Emission Impacts for Mitigated Ivanpah 3 ISEGS Project

Pollutant	Avg. Period	Impacts[a] (µg/m³)	Background (µg/m³)	Total Impact (µg/m³)	Standard (µg/m³)	Percent of Standard
SO_2	1-hr	2.6	94.3	96.9	665	15%
	24-hr	0.1	13.1	13.2	105	13%
	Annual	0.0	2.7	2.7	80	3%

Sources: CEC 2009 and CEC 2010
Notes:
[a] Impacts based on data presented in CEC 2009, Air Quality Table 10 and in CEC 2010, Addendum Air Quality Tables 1 and 2.

The modeled impacts from operation were added to the background concentrations to assess the impact from the ISEGS project. With the exception of 24-hour PM_{10}, there would be no new exceedances from the project operation (as indicated above). The implementation of fugitive dust mitigation practices would help reduce the emissions and thus the impacts from PM_{10}. Similar to the construction analysis, the results show that project operations would not cause violation of the NAAQS. Therefore, no significant NEPA impacts would occur after implementation of the mitigation measures (AQ-SC37 for operation). Similarly, in the case where there would be overlapping impacts from construction and operation, the modeling analysis indicates that there would be no significant NEPA impacts with mitigation.

Unless mitigated, the contribution of the Mitigated Ivanpah 3 project's direct and indirect, or secondary emissions to existing violations of the ozone and PM_{10} ambient air quality standards would likely be CEQA significant. Therefore, CEC staff recommends AQ-SC6 to mitigate the onsite maintenance vehicle emissions and AQ-SC7 to mitigate the operating fugitive dust emissions to ensure that the potential ozone and PM10 CEQA impacts are mitigated to less than significant over the life of the project.

The ISEGS Mitigated Ivanpah 3 project would comply with applicable District Rules and Regulations, including New Source Review requirements, and CEC staff recommends the inclusion of the Districts FDOC conditions as Conditions of Certification AQ-1 through AQ-39 and the addition of Condition of Certification AQ-SC9 to ensure that the emergency engines meet applicable model year emission standards.

The ISEGS area is nonattainment for ozone, therefore the emissions of NO_X and VOCs are analyzed in the ISEGS FSA/DEIS since they are precursors to ozone. In the absence of mitigation, there is a possibility for higher levels of ground-level ozone from the construction and operation of the ISEGS project.

Secondary particulate formation (assumed to be 100 percent $PM_{2.5}$) is the process of conversion from gaseous reactants to particulate products. The ISEGS project is not a notable source of ammonia emissions, so the small amount of operating NO_X and SO_X emissions that would be generated by this project would have a reduced potential to create secondary particulates.

The applicant proposed measures for operations include emission controls on boilers, purchase of a new engine for the emergency generator that would meet the Tier 2 emission standards, and use of a Tier 2 engine for the fire water pump. But based on the current New Source Performance Standards (NSPS) standards, the fire pump engine would not have emissions higher than the Tier 3 emission standards. The emission controls on boilers would include low NO_X burners, flue gas recirculation, and emission limits for criteria pollutants for all the boilers. ARB low sulfur diesel fuel would be used for the emergency generator engines.

The total operations GHG emissions estimate for the Mitigated Ivanpah 3 project scope, as presented in the FSA Addendum, is approximately 25,359 $MTCO_2e$. ISEGS is a solar project with a nightly shutdown so it will operate less than 60 percent of capacity; therefore, the project is not subject to the requirements of SB 1368 and the Greenhouse

Gas Emission Performance Standard. However, the ISEGS would easily comply with the requirements of SB 1368 and the Greenhouse Gas Emission Performance Standard.

The operation of the ISEGS Mitigated Ivanpah 3 plant would affect the overall electricity system operation and GHG emissions in several ways:

- ISEGS Mitigated Ivanpah 3 would provide low-GHG, renewable generation.
- ISEGS Mitigated Ivanpah 3 would facilitate to some degree the replacement of out-of-state high-GHG-emitting (e.g., coal) electricity generation that must be phased out in conformance with the State's new Emissions Performance Standard.
- ISEGS Mitigated Ivanpah 3 would facilitate to some extent the replacement of generation provided by aging fossil-fired power plants that use once-through cooling.

These system impacts would result in a net reduction in GHG emissions across the electricity system providing energy and capacity to California. Thus, staff concludes that the project would result in a cumulative overall reduction in GHG emissions from power plants, would not worsen current conditions, and would not result in impacts that are cumulatively CEQA significant.

Decommissioning Impacts

During closure and dismantling activities for the ISEGS project, the sources of air emissions would cease to operate and the only emissions would be those associated with exhaust and fugitive emissions generated during the dismantling process. The emissions are expected to be less than those occurring during construction. The CEQA air quality impacts are expected to be less than significant.

With the proposed mitigation measures in place, the project is not expected to have significant NEPA impacts or cause any violations of the CEQA significance criteria.

BLM's FEIS Impact Conclusions

Construction Impacts

The construction impacts resulting from the Mitigated Ivanpah 3 Alternative would be associated with fugitive dust emissions, emissions from construction vehicles, and emissions from worker commuting vehicles. In addition, a small amount of hydrocarbon emissions may occur because of the temporary storage of petroleum fuel at the site.

This modeling analysis for the original ISEGS project scope indicated, with the exception of 24-hour PM_{10} impacts, that the project would not create new exceedances or contribute to existing exceedances for any of the modeled air pollutants. BLM notes that the maximum local background 24-hour measurements of PM_{10} may be substantially impacted by wind-blown dust. However, in light of the existing PM_{10} and ozone non-attainment status for the project site area, the construction NOx, VOC, and PM emissions would be potentially adverse and, therefore, the off-road equipment and fugitive dust emissions should be mitigated to the extent feasible. The modeling analysis shows that, after implementation of the fugitive dust mitigation measures, the project's construction is not predicted to cause violations of the NAAQS. Therefore, no direct adverse impacts would occur after implementation of the fugitive dust mitigation measures.

The construction of the Mitigated Ivanpah 3 Alternative would be expected to generate approximately the same rates of fugitive dust, construction vehicle emissions, and worker commuting vehicle emissions as the ISEGS original proposed project. Although the size, number of power tower receivers, and number of heliostats would be reduced, it is expected that the construction would occur with the same type and amount of equipment and workers as the proposed project. The primary difference would be that the duration of construction would be expected to be shorter

for the Mitigated Ivanpah 3 Alternative, by approximately 17 percent (48 months for the proposed project versus 40 months for the Mitigated Ivanpah 3 Alternative). Although the rate of emissions would be the same for the construction of both alternatives, the overall mass of emissions associated with the Mitigated Ivanpah 3 Alternative would be lower, due to the reduced duration of construction.

Although the air quality impacts associated with construction of the Mitigated Ivanpah 3 Alternative would be reduced from those associated with the proposed project, it would still potentially cause direct, adverse air quality impacts. Therefore, mitigation measures AQ-SC1 through AQ-SC4 would also be applicable to the Mitigated Ivanpah 3 Alternative. Mitigation measures AQ-SC1 to AQ-SC4 incorporate the applicant's proposed measures, with revisions and additions to reduce the impacts from the construction of the proposed project. Specific changes include a more aggressive dust control requirement to use polymer based, or equivalent, soil stabilizers on the site's unpaved roads and inactive disturbed surfaces during construction.

The construction-related GHG emissions sources associated with the Mitigated Ivanpah 3 Alternative would be the same as those described for the proposed project, including emissions from vehicles and heavy equipment. Overall, these GHG emissions would be lower than those associated with the proposed project, due to the reduced number of heliostats and power towers, and the reduced duration of construction. Construction-related GHG emissions from the proposed project would likely result in minimal adverse impacts; however, since emissions associated with this alternative would be even lower, there would not be expected to be any adverse impacts from GHG emissions.

Operational Impacts

Operations impacts associated with the Mitigated Ivanpah 3 Alternative would result from the following sources:

- Fugitive dust from vehicle traffic on unpaved roads and maintenance paths;
- Emissions from maintenance vehicles;
- Emissions from worker's commuting vehicles; and
- Emissions from stationary sources such as the boilers, emergency generators, and emergency fire water pumps.

This modeling analysis for the original ISEGS project scope indicated, with the exception of 24-hour PM_{10} impacts, that the project would not create new exceedances or contribute to existing exceedances for any of the modeled air pollutants. BLM notes that the maximum local background 24-hour measurements of PM_{10} may be substantially impacted by wind-blown dust. However, in light of the existing PM10 and ozone non-attainment status for the project site area, the operating NOx, VOC, and PM emissions could potentially result in direct impacts and, therefore, the stationary equipment, the off-road maintenance equipment, and fugitive dust emissions should be mitigated to the extent feasible. The modeling analysis shows that, after implementation of the fugitive dust mitigation measures, the project's operation is not predicted to cause violations of the NAAQS. Therefore, no adverse impacts would be expected to occur after implementation of the fugitive dust mitigation measures.

The applicant also provided a modeling analysis using the EPA-approved AERMOD model to estimate the impacts of the project's NOx, PM_{10}, CO, and SOx emissions resulting from worst-case overlap when the project is in partial operation and still being constructed. Similar to the assessment of the construction and operating impacts, BLM added the modeled impacts to the available highest ambient background concentrations recorded during the previous three years from nearby monitoring stations to assess the project's overlapping construction/operation impacts. This modeling analysis again indicates, with the exception of 24-hour PM_{10} impacts, that the project would not create new exceedances or contribute to existing exceedances for any of the modeled air pollutants. Considering the existing PM_{10} and ozone non-attainment status for the project site area, the construction and operating NOx, VOC, and PM emissions could potentially result in adverse impacts and, therefore, these construction and operations emission sources should be mitigated to the extent feasible. The modeling analysis shows that, after implementation

of the fugitive dust mitigation measures, the project's worst-case construction/operation overlap period is not predicted to cause violations of the NAAQS. Therefore, no adverse impacts would be expected to occur after implementation of the fugitive dust mitigation measures.

There are no regulatory agency models approved for assessing single source ozone impacts. However, because of the known relationship of NOx and VOC emissions to ozone formation, it can be said that the emissions of NOx and VOC from the ISEGS project do have the potential (if left unmitigated) to contribute to higher ozone levels in the region, which are already designated nonattainment for the state ozone standard.

The northeastern San Bernardino County portion of the Mojave Desert Air Basin has not undergone the rigorous secondary particulate studies that have been performed in other areas of California, such as the San Joaquin Valley, that have more serious fine particulate pollution problems. However, due to the limited agricultural activity in the area the project site area would likely be characterized as ammonia poor, and the ISEGS project is not a notable source of ammonia emissions, so the small amount of operating NOx and SOx emissions that would be generated by this project would have a reduced potential to create secondary particulates.

In the submittal describing the Mitigated Ivanpah 3 proposal the applicant's original air modeling for the stationary sources was modified to account for the differences in the number, size, and locations of the sources with respect to the property boundaries. The other factors, including background concentrations, meteorological input data, and the modeling methodology were kept the same as those used for the original modeling. The primary differences between the proposed project and the Mitigated Ivanpah 3 Alternative included:

- The size of the boiler at Ivanpah Unit 3 was reduced from 462.2 to 231.1 MMBtu/hr (50 percent), resulting in a reduction in fuel use.
- One of the two emergency generators proposed for Ivanpah Unit 3 for the proposed project would be eliminated in the Mitigated Ivanpah 3 Alternative.
- The Ivanpah Unit 3 power block, including the associated emissions sources (boiler, emergency generator, and emergency fire pump), would be moved 272 feet to the southwest, which is closer to the ROW boundary than as in the proposed project.

In general, these changes result in a lower mass of emissions from the Mitigated Ivanpah 3 Alternative, as compared to the proposed project, and therefore reduced concentrations of almost all pollutants in almost all locations and durations. The only exception is the modeling result for NO_2 impacts, which shows an increase in short-term (1-hour and 3-hour) concentrations at the site boundary. This result occurs because, even though the number of emergency generators was reduced from two to one, the original modeling assumed that only one would operate at any given time. Therefore, the total amount of emissions released during the short-term testing of the emergency generator was the same in the modeling for the proposed project and the Mitigated Ivanpah 3 Alternative. Because the generator in the Mitigated Ivanpah 3 Alternative is located 272 feet closer to the site boundary, the result for the short-term analyses (1-hr and 3-hr) showed an increase over the proposed project. However, the increase in maximum concentration is small (123.7 ug/m3 for the proposed project versus 126.7 ug/m3 for the Mitigated Ivanpah 3 Alternative), and the overall mass of emissions per year would be reduced by 50 percent.

Overall, air emissions associated with operation of the Mitigated Ivanpah 3 Alternative would be lower than those associated with the proposed project. However, the emissions could still cause direct, adverse impacts to air quality in the absence of mitigation measures. Mitigation measure AC-SC7 would also be applicable to the Mitigated Ivanpah 3 Alternative. However, due to the different sizes of boilers associated with the Mitigated Ivanpah 3 Alternative, the District permit conditions would be different for this alternative (updated mitigation measures AQ-1 – through AQ-31 are provided in Section 3.12.5.4)

By generating needed power with only a small supplemental use of fossil fuels, the Mitigated Ivanpah 3 Alternative would potentially displace greenhouse gas and pollutant emissions associated with fossil fuel-powered generating facilities in the transmission area. The features of the Mitigated Ivanpah 3 alternative that would involve GHG emissions from operations that are different than those of the proposed project are:

- Reduction in annual fuel usage in the auxiliary boilers resulting primarily from the 50% reduction in the capacity for the Ivanpah 3 auxiliary boiler,
- Reduction in the acreage of vegetation (natural carbon uptake) that would be disturbed;
- Elimination of one of the emergency generators for Ivanpah 3, and
- Elimination of approximately 40,000 heliostats (from 213,500 to 173,500) which reduce the vehicle miles travelled (VMT) for maintenance (i.e., mirror washing) and the associated tailpipe GHG emissions.

The estimate of GHG emissions for the Mitigated Ivanpah 3 Alternative, including stationary sources and onsite and offsite mobile sources, would be permitted, on an annual basis, to emit approximately 20,900 $MTCO_2e$ per year if operated at its maximum permitted level.

Like the proposed project, the Mitigated Ivanpah 3 Alternative would disturb natural vegetation that acts to uptake carbon dioxide. Because the footprint of the Mitigated Ivanpah 3 Alternative would be reduced by approximately 9 percent, the disturbance of natural vegetation would be reduced by the same amount. For the 3,564 acre footprint of the Mitigated Ivanpah 3 Alternative, the maximum equivalent loss in carbon uptake would be 5,316 MT of CO_2 per year, which would correspond to 0.006 MT of CO_2 per MW generated. Like the proposed project, the natural carbon uptake loss is negligible in comparison with the reduction in fossil fuel CO_2 emissions.

Decommissioning Impacts

Similar to construction, the closure and decommissioning impacts resulting from the Mitigated Ivanpah 3 Alternative would be associated with fugitive dust emissions, emissions from heavy equipment, and emissions from worker commuting vehicles. For the proposed project, these emissions would not have an adverse impact on air quality, for the following reasons:

- The activities would have a much shorter duration than construction;
- Emissions from equipment would be expected to be lower due to technology advancement; and
- The activities would likely be controlled with mitigation measures that were equivalent or superior to those used for construction.

Based on these factors, including the shorter duration associated with decommissioning the reduced acreage of disturbance, reduced number of heliostats, and reduced number of power tower receivers, adverse impacts associated with closure and decommissioning of the Mitigated Ivanpah 3 Alternative would not be expected.

The closure-related GHG emissions sources associated with the Mitigated Ivanpah 3 Alternative would be the same as those described for the proposed project, including emissions from vehicles and heavy equipment. Overall, these GHG emissions would be lower than those associated with the proposed project, due to the reduced number of heliostats and power towers, and the reduced duration of decommissioning. Closure-related GHG emissions from the proposed project would result in minimal adverse impacts; however, since emissions associated with this alternative would be even lower, no adverse impacts would be anticipated from GHG emissions.

3.3.5.4 ISEGS Conditions of Certification/Mitigation Measures

CEC Conditions of Certification

CEC conditions AQ-SC1 through AQ-SC4 and AQ-SC7 are both CEQA and NEPA mitigation conditions. CEC conditions AQ-SC5, AQ-SC6, and AQ-SC8 through AQ-SC10 are CEQA-only conditions.

AQ-SC1 Air Quality Construction Mitigation Manager (AQCMM): The project owner shall designate and retain an on-site AQCMM who shall be responsible for directing and documenting compliance with Conditions of Certification AQ-SC3, AQ-SC4 and AQSC5 for the entire project site and linear facility construction.

AQ-SC2 Air Quality Construction Mitigation Plan (AQCMP): The project owner shall provide an AQCMP, for approval, which details the steps that will be taken and the reporting requirements necessary to ensure compliance with Conditions of Certification AQSC3, AQ-SC4, and AQ-SC5.

AQ-SC3 Construction Fugitive Dust Control: The AQCMM shall submit documentation to the BLM's Authorized Officer and CPM in each Monthly Compliance Report that demonstrates compliance with the following mitigation measures for the purposes of preventing all fugitive dust plumes from leaving the project.

AQ-SC4 Dust Plume Response Requirement: The AQCMM or an AQCMM Delegate shall monitor all construction activities for visible dust plumes.

AQ-SC5 Diesel-Fueled Engine Control: The AQCMM shall submit to the CPM, in the MCR, a construction mitigation report that demonstrates compliance with stated mitigation measures for purposes of controlling diesel construction-related emissions.

AQ-SC6 The project owner, when obtaining dedicated vehicles for mirror washing activities and other facility maintenance activities, shall only obtain new model year vehicles that meet California on-road vehicle emission standards for the model year when obtained.

AQ-SC7 The project owner shall provide a site operations dust control plan, including all applicable fugitive dust control measures identified in AQ-SC3 that would be applicable to reducing fugitive dust from ongoing operations.

AQ-SC8 The project owner shall provide the CPM copies of all District issued Authority-to-Construct (ATC) and Permit-to-Operate (PTO) for the facility.

AQ-SC9 The emergency generator and fire pump engines procured for this project will meet or exceed the NSPS Subpart IIII emission standards for the model year that corresponds to their date of purchase.

AQ-SC10 The ISEGS 1, ISEGS 2, and ISEGS 3 boilers shall not exceed a total annual natural gas fuel heat input that is more than 5 percent of the total annual heat input from the sun for ISEGS 1, ISEGS 2, and ISEGS 3, respectively.

District Conditions of Certification

District conditions AQ-1 through AQ-31 are CEQA-only required conditions.

Conditions Applicable to Ivanpah 1, 2, and 3 Boilers

AQ-1 Operation of this equipment must be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

AQ-2 The owner/operator shall operate this equipment in strict accord with the recommendations of the manufacturer or supplier and/or sound engineering principles and consistent with all information submitted with the application for this permit, which produce the minimum emission of air contaminants.

AQ-3 This boiler shall use only natural gas as fuel and shall be equipped with a meter measuring fuel consumption in standard cubic feet.

AQ-4 The owner owner/operator shall maintain a current, on-site (at a central location if necessary) log for this equipment for five (5) years, which shall be provided to District, state or federal personnel upon request. This log shall include calendar year fuel use for this equipment in standard cubic feet, or BTU's, and daily hours of operation.

AQ-5 Not later than 180 days after initial startup, the operator shall perform an initial compliance test on this boiler in accordance with the District Compliance Test Procedural Manual.

AQ-6 The owner/operator shall perform annual compliance tests in accordance with the District Compliance Test Procedural Manual. Prior to performing these annual tests, the boiler shall be tuned in accord with the manufacturer's specified tune-up procedure, by a qualified technician.

AQ-7 This boiler shall be operated in compliance with all applicable requirements of 40 CFR 60 Subpart Db - Standards of Performance for Industrial – Commercial-Institutional Steam Generating Units (NSPS Db).

AQ-8 Records of fuel supplier certifications of fuel sulfur content shall be maintained to demonstrate compliance with the sulfur dioxide and particulate matter emission limits.

AQ-9 The owner/operator shall continuously monitor and record fuel flow rate and flue gas oxygen level.

AQ-10 In lieu of installing CEMs to monitor NOx emissions, and pursuant to 40 CFR 60 Subpart Db, Section 60.49b(c), the owner/operator shall monitor boiler operating conditions and estimate NOx emission rates per a District approved emissions estimation plan.

AQ-11 The owner/operator shall comply with all applicable recordkeeping and reporting requirements of NSPS Db.

AQ-12 This boiler shall not burn more than 0.9 MMSCF of natural gas in any single day, and no more than 328 MMSCF in any calendar year.

Conditions Applicable to Ivanpah 1, 2 and 3 Emergency Fire Pumps

AQ-13 This system shall be installed, operated and maintained in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles which produce the minimum emissions of contaminants. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit.

AQ-14 These engines may operate in response to notification of impending rotating outage if the area utility has ordered rotating outages in the area where the engines are located or expects to order such outages at a particular time, the engines are located in the area subject to the rotating outage, the engines are operated no more than 30 minutes prior to the forecasted outage, and the engines are shut down immediately after the utility advises that the outage is no longer imminent or in effect.

AQ-15 These engines may operate in response to fire suppression requirements and needs.

AQ-16 These units shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis per CARB Diesel or equivalent requirements.

AQ-17A non-resettable four-digit (9,999) hour timer shall be installed and maintained on these units to indicate elapsed engine operating time.

AQ-18 These units shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted. In addition, this unit shall be operated no more than 50 hours per year for testing and maintenance, excluding compliance source testing. Time required for source testing will not be counted toward the 50 hour per year limit.

AQ-19 The hour limit of AQ-1828 can be exceeded when the emergency fire pump assemblies are driven directly by a stationary diesel fueled CI engine when operated per and in accord with the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 2006 edition or the most current edition approved by the CARB Executive Officer. {Title 17 CCR 93115(c)16}

AQ-20 The owner/operator shall maintain a operations log for these units current and on-site, either at the engine location or at a on-site location, for a minimum of two (2) years, and for another year where it can be made available to the District staff within 5 working days from the District's request, and this log shall be provided to District, State and Federal personnel upon request.

AQ-21These fire protection units are subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (Title 17 CCR 93115). In the event of conflict between these conditions and the ATCM, the more stringent requirements shall govern.

AQ-22 This unit is subject to the requirements of the Federal New Source Performance Standards (NSPS) for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60 Subpart IIII).

Conditions Applicable to Ivanpah 1, 2, and 3 Emergency Generators

AQ-23 Engine may operate in response to notification of impending rotating outage if the area utility has ordered rotating outages in the area where the engine is located or expects to order such outages at a particular time, the engine is located in the area subject to the rotating outage, the engine is operated no more than 30 minutes prior to the forecasted outage, and the engine is shut down immediately after the utility advises that the outage is no longer imminent or in effect.

AQ-24 This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis per CARB Diesel or equivalent requirements.

AQ-25 This equipment shall be installed, operated and maintained in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles which produce the minimum emissions of contaminants. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit.

AQ-26 A non-resettable four-digit (9,999) hour timer shall be installed and maintained on this unit to indicate elapsed engine operating time.

AQ-27 This unit shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted. In addition, this unit shall be operated no more than 50 hours per year, and no more than 0.5 hours per day for testing and maintenance, excluding compliance source testing. Time required for source testing will not be counted toward the 50 hour per year limit.

AQ-28 The owner/operator shall maintain an operations log for this unit current and on-site (or at a central location) for a minimum of five (5) years, and this log shall be provided to District, State and Federal personnel upon request.

AQ-29 This genset is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (Title 17 CCR 93115). In the event of conflict between these conditions and the ATCM, the more stringent requirements shall govern.

AQ-30 This unit shall not be used to provide power during a voluntary agreed to power outage and/or power reduction initiated under an Interruptible Service Contract (ISC); Demand Response Program (DRP); Load Reduction Program (LRP) and/or similar arrangement(s) with the electrical power supplier.

AQ-31 This unit is subject to the requirements of the Federal New Source Performance Standards (NSPS) for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60 Subpart IIII).

Green House Gas Emissions

No Conditions of Certification related to project greenhouse gas emissions are proposed because the project would create beneficial GHG impacts. The project owner would comply with any future applicable GHG regulations formulated by the ARB or the U.S.EPA, such as GHG reporting or emissions cap and trade markets.

BLM Mitigation Measures

The BLM carries forward the same mitigation measures in the ISEGS FEIS as were discussed in the CEC/BLM FSA/DEIS. The summary of the FEIS indicates that AQ-SC1 through AQ-SC10 are either components of monitoring to be managed by the CEC or a specific CEC specific requirement. The district (MDAQMD) conditions of certification for the Mitigated Ivanpah 3 alternative are represented in AQ-1 through AQ-31.

No mitigation measures related to Greenhouse Gas emissions are proposed. The project owner would comply with any future applicable GHG regulations formulated by the ARB, such as GHG reporting or emissions cap and trade markets.

3.3.6 Combined Impact of EITP and ISEGS

The CEQA and NEPA impact analyses for EITP and ISEGS were based on similar significance criteria that evaluated to what extent the proposed projects would impact air quality and effect GHG emissions during construction and operation of each project.

Air Quality

The CPUC concluded that construction activities associated with the EITP would generate emissions of fugitive dust (PM_{10} and $PM_{2.5}$) and NO_x that could result in short-term significant air quality impacts. The BLM and CEC had similar conclusions regarding the construction of the ISEGS. However, the BLM and CEC concluded that mitigation measures would likely reduce the impacts of fugitive dust emissions during the construction of the ISEGS to a less than significant level. The majority of construction of the EITP would not occur in proximity to the ISEGS. During these periods, there would likely be no combined impacts. However, during the periods when construction of the EITP is near the ISEGS, the combined impact of both projects could result in air quality impacts greater than the projects individually. Because the EITP would result in short-term significant air quality impacts, if construction of the EITP and the ISEGS overlap and occur within proximity to each other, the EITP and the ISEGS together would result in a short-term significant air quality impact.

The CPUC concluded that the operational activities associated with the EITP following construction would result in only very low levels of emissions of criteria air pollutants. Thus, the long-term impacts associated with EITP operational emissions would be less than significant. The BLM and CEC identified numerous stationary and mobile source emissions associated with the ISEGS. The BLM and CEC have concluded that air emission controls and mitigation measures would result in the impacts from ISEGS operational air pollutant emissions being less than

significant. Since EITP operational emissions would be very minor and in most instances occur at long distances form the ISEGS, the combined impacts from EITP and ISEGS would be equivalent to the impacts of the projects individually.

GHGs

Construction activities associated with the EITP would generate GHG missions. The CPUC concluded these GHGs emissions would be short-term and less than significant. The BLM and CEC had similar conclusions regarding GHG emissions generated during construction of the ISEGS. The combined GHG emissions from construction of the EITP (i.e., 6,950 $MTCO_2e$) and ISEGS (i.e., 17,779 $MTCO_2e$) are estimated at 24,729 $MTCO_2e$. Amortized over a 30-year period, these combined GHG emissions would be approximately 824 $MTCO_2e$ per year on an annual basis. This value is well below the significance threshold of 10,000 $MTCO_2e$ per year adopted by the CPUC. Thus, the combined GHG emissions from construction activities do not represent a significant impact.

The CPUC concluded that the operational activities associated with the EITP following construction would result in only very low levels of GHG emissions (i.e., 194 $MTCO_2e$ per year). Thus, the long-term impacts associated with EITP operational GHG emissions would be less than significant. The BLM and CEC identified numerous stationary and mobile source emissions associated with the ISEGS and also concluded that GHG emissions would be less than significant. Further, the BLM and CEC identify the potential benefits of the ISEGS of replacing fossil-fueled power which could result in a net decrease in GHG emissions.

The CEC and the BLM analysis for the ISEGS project and the analysis included in this document for the EITP use different approaches and methodologies for calculating GHG impacts; nevertheless, the combined impact of the EITP and ISEGS due to GHG emissions would be less than significant. The GHG emissions from the EITP would be less than 1% of the GHG emissions from the ISEGS; therefore, the EITP contribution to the combined impacts is inconsequential. Though the BLM and the CEC have determined that the ISEGS project would result in a less than significant impact under this criterion, the annual operational emissions of the ISEGS (i.e., 27,444 $MTCO_2e$ per year) would be greater than the significance threshold of 10,000 $MTCO_2e$ per year adopted by the CPUC. However, unlike the CPUC's analysis of the impacts of GHG emissions for the EITP, the BLM and CEC take into account the fact that ISEGS would likely provide a beneficial reduction in indirect GHG emissions by potentially replacing fossil-fuel electric power plants, although the beneficial reduction potential is not quantified in the BLM and CEC analysis. Therefore because ISEGS would be consistent with plans to reduce long-term emissions of GHGs, the BLM and CEC have determined that the impact of GHG emissions associated with the ISEGS project would be less than significant. The differences in methodologies and thresholds employed for the EITP and the ISEGS project reflect both differences in agency policy and differences in the nature of generation and transmission projects. Because the operational GHG emissions of the EITP would be so minimal as to be inconsequential and because the GHG emissions of ISEGS, when considering the benefit of replacing fossil fuel generation sources with a renewable generation source, would be less than significant, the combined impact of the EITP and ISEGS would be less than significant under this criterion.

~~3.3.5 Whole of the Action / Cumulative Action~~

~~Below is a summary of information related to air quality and GHGs in the ISEGS Final Staff Assessment / Draft Environmental Impact Statement (FSA/DEIS) prepared by the California Energy Commission (CEC) and the BLM. This section focuses on differences in the ISEGS setting and methodology compared with the setting and methodology discussed above for the EITP. This section also discloses any additional impacts or mitigation imposed by the CEC and the BLM for the ISEGS project.~~

~~3.3.5.1 Setting~~

~~Since the ISEGS project is located in the Southern California Mojave Desert close to the California-Nevada border, the environmental setting is very similar to that of the EITP.~~

Applicable Laws, Regulations, and Standards

Due to the variation in project components and location between EITP and ISEGS, different laws, regulations, and standards would apply to ISEGS than those listed above for EITP (see Table 3.3-8). Since ISEGS would be developed entirely within California on BLM land, the Nevada regulations associated with the EITP would not apply. ISEGS project components and operational features that trigger additional laws, regulations, and standards include:

- Three solar concentrating thermal power plants with one natural-gas-fired steam boiler each
- Natural gas supplied through a 6-mile distribution pipeline
- Air cooled condensers at each of the three plants
- Diesel-fired 240-hp fire pump engine at each plant
- Four 3,750-hp emergency generator engines
- Tractor-pulled mirror washing trailers

Table 3.3-8 Laws, Regulations, and Standards Applicable to the ISEGS Project

Law, Regulation, or Standard	Description	Project Component
Federal		
40 CFR Part 52	Nonattainment NSR requires a permit, BACT, and offsets. Permitting and enforcement is delegated to MDAQMD. PSD requires major sources or major modifications to major sources to obtain permits for attainment pollutants. The ISEGS project is a new source that has a rule-listed emission source; thus, the PSD trigger levels are 100 tons per year for NO_x, VOCs, SO_2, $PM_{2.5}$, and CO. The ISEGS project's proposed emissions are below NSR and PSD applicability thresholds.	Operations
40 CFR Part 60	NSPS, Subpart D, Standards of Performance for Electricity Steam Generation Units. Establishes emission standards and monitoring/recordkeeping requirements for units with greater than 250 MM BTU/hr heat input. Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. Establishes emission standards for these engines, which include emergency fire water pump engines.	Operations
State		
HSC Section 40910-40930	Permitting of source needs to be consistent with CARB-approved Clean Air Plans.	Operations
HSC Section 41700	Restricts emissions that would cause nuisance or injury.	Operations
CCR Section 93115	Airborne Toxics Control Measure for Stationary Compression Ignition Engines. Limits the types of fuels allowed, establishes maximum emission rates, establishes recordkeeping requirements on stationary compression ignition engines including emergency fire water pump engines.	Operations
Local		
Rule 404 Particulate Matter – Concentration	Limits the particulate matter concentration from stationary source exhausts.	Operations
Rule 900 Standard of Performance for New Stationary Source	Incorporates the Federal NSPS (40 CFR 60) rules by reference.	Operations
Regulation XII – Federal Operating Permits	Requires that new or modified major facilities or facilities that trigger NSPS, Acid Rain or other federal air quality programs obtain a Title V federal operating permit.	Operations

Table 3.3-8 Laws, Regulations, and Standards Applicable to the ISEGS Project

Law, Regulation, or Standard	Description	Project Component
Rule 1210 – Acid Rain	Requires that facilities subject to the federal Acid Rain program obtain permits and comply with emissions and monitoring provisions.	Operations
Rule 1303 – New Source Review	Specifies BACT/offsets technology and requirements for any new emissions unit that has potential to emit any affected pollutants.	Operations
Rule 1306 – Electric Energy Generating Facilities	Describes actions to be taken for permitting of power plants that are within the jurisdiction of the California Energy Commission.	Operations

Key:
BACT = Best Available Control Technology
CARB = California Air Resource Board
CCR = California Code of Regulations
CFR = Code of Federal Regulations
CO = carbon monoxide
HSC = Health and Safety Code
MDAQMD = Mojave Desert Air Quality Management District
MM BTU/hr = 1 million British Thermal Units per hour
NO_X = nitrogen oxides
NSPS = New Source Performance Standards
$PM_{2.5}$ = particulate matter with a diameter of 2.5 micrometers or less
PSD = Prevention of Significant Deterioration
SO_2 = sulfur dioxide
VOC = volatile organic compound

3.3.5.2 Methodology

The methodology for analyzing impacts for the ISEGS project was similar to that used for the EITP; differences are noted below. CEC staff primarily used two CEQA significance criteria to evaluate the ISEGS project. First, all project emissions of nonattainment criteria pollutants and their precursors (NO_X, VOC, PM_{10}, and SO_2) were considered CEQA significant cumulative impacts that must be mitigated. Second, any AAQS violation or any contribution to any AAQS violation caused by any project emissions was considered CEQA significant and mitigation was required. BACT would be applied to both the onsite stationary and the non-stationary sources for the ISEGS project. For the NEPA analysis, the Prevention of Significant Deterioration (PSD) threshold was considered in addition to the NAAQS and general conformity considered above for EITP. Also, the emissions from the proposed project, both stationary source and onsite mobile source, were analyzed for ISEGS using air dispersion models to determine the probable impacts at ground level.

3.3.5.3 Impacts

The CEC and BLM have published the following impacts related to air quality and GHGs for the ISEGS project:

Construction Impacts

The ISEGS project would consist of three phases, with total construction duration of 48 months. Activities such as site preparation, construction, and installation of major equipment and structures would result in fugitive dust emissions and emissions from equipment exhausts. In addition, a small amount of hydrocarbon emissions may occur because of the temporary storage of petroleum fuel at the site. Air dispersion modeling was done to analyze the ground level impacts from all construction activities. Peak hourly, daily, and annual construction equipment exhaust and fugitive dust emissions were used to perform the modeling analysis. The modeled impacts from construction activities were added to the background concentrations to assess the impact from the project. The modeling results indicated that there would be no new exceedances created except for 24-hour PM_{10}. Since the area is nonattainment for PM_{10}, feasible mitigation measures would be implemented for the ISEGS project. The modeling analysis shows that, after implementation of the recommended fugitive dust mitigation measures, the project's construction would not

cause violations of the ambient air quality standards. Therefore, no significant NEPA impacts would occur after implementation of the mitigation measures.

To mitigate the impacts from the construction of the facility, the applicant has proposed to follow the mitigation measures from the SCAQMD CEQA guidelines. In addition to those, the BLM and CEC have recommended the use of polymer based soil stabilizers, or equivalent, on the site's unpaved roads and inactive disturbed surfaces during construction.

Construction-related impacts associated with GHG emissions during construction were not quantified in the ISEGS FSA/DEIS.

Operational Impacts

Operational emissions are expected from the boilers, fire pump, and emergency generator. The impacts were analyzed with the help of the U.S. EPA dispersion model AEMROD. The modeled impacts from operation were added to the background concentrations to assess the impact from the ISEGS project. With the exception of 24-hour PM_{10}, there would be no new exceedances from the project operation. The implementation of fugitive dust mitigation practices would help reduce the emissions and thus the impacts from PM_{10}. Similar to the construction analysis, the results show that project operations would not cause violation of the NAAQS. Therefore, no significant NEPA impacts would occur after implementation of the mitigation measures. Similarly, in the case where there would be overlapping impacts from construction and operation, the modeling analysis indicates that there would be no significant NEPA impacts with mitigation.

The ISEGS area is nonattainment for ozone, therefore the emissions of NO_X and VOCs are analyzed in the ISEGS FSA/DEIS since they are precursors to ozone. In the absence of mitigation, there is a possibility for higher levels of ground-level ozone from the construction and operation of the ISEGS project.

Secondary particulate formation (assumed to be 100 percent $PM_{2.5}$) is the process of conversion from gaseous reactants to particulate products. The ISEGS project is not a notable source of ammonia emissions, so the small amount of operating NO_X and SO_X emissions that would be generated by this project would have a reduced potential to create secondary particulates.

The applicant proposed measures for operations include emission controls on boilers, purchase of a new engine for the emergency generator that would meet the Tier 2 emission standards, and use of a Tier 2 engine for the fire water pump. But based on the current New Source Performance Standards (NSPS) standards, the fire pump engine would not have emissions higher than the Tier 3 emission standards. The emission controls on boilers would include low NO_X burners, flue gas recirculation, and emission limits for criteria pollutants for all the boilers. ARB low sulfur diesel fuel would be used for the emergency generator engines.

Although the onsite emissions of GHGs was predicted to be approximately 25,000 MT/yr, CEC concluded that the ISEGS project overall would reduce GHG emissions.

> "The operation of the ISEGS Mitigated Ivanpah 3 plant would affect the overall electricity system operation and GHG emissions in several ways:
>
> - ISEGS Mitigated Ivanpah 3 would provide low-GHG, renewable generation.
> - ISEGS Mitigated Ivanpah 3 would facilitate to some degree the replacement of out-of-state high-GHG-emitting (e.g., coal) electricity generation that must be phased out in conformance with the State's new Emissions Performance Standard.
> - ISEGS Mitigated Ivanpah 3 would facilitate to some extent the replacement of generation provided by aging fossil-fired power plants that use once-through cooling.

These system impacts would result in a net reduction in GHG emissions across the electricity system providing energy and capacity to California. Thus, staff concludes that the project would result in a cumulative overall reduction in GHG emissions from power plants, would not worsen current conditions, and would not result in impacts that are cumulatively CEQA significant."

Decommissioning Impacts

During closure and dismantling activities for the ISEGS project, the sources of air emissions would cease to operate and the only emissions would be those associated with exhaust and fugitive emissions generated during the dismantling process. The emissions are expected to be less than those occurring during construction. The CEQA air quality impacts are expected to be less than significant.

With the proposed mitigation measures in place, the project is not expected to have significant NEPA impacts or cause any violations of the CEQA significance criteria.

3.3.5.4 Mitigation Measures

The ISEGS FSA/DEIS recommends that the following Conditions of Certification be required by the CEC and the BLM to lessen impacts to air quality and GHGs if the ISEGS project is approved:

Air Quality Staff Conditions of Certification:

AQSC-1: The project owner shall designate and retain an onsite Air Quality Construction Mitigation Manager (AQCMM) who shall be responsible for directing and documenting compliance with Conditions of Certification AQSC3, AQ-SC4, and AQ-SC5 for the entire project site and linear facility construction.

AQ-SC2: The project owner with the AQCMP shall provide an Air Quality Construction Mitigation Plan for approval, which details the steps to ensure compliance with Conditions of Certification AQ-SC3, AQ-SC4, and AQ-SC5.

AQ-SC3: The AQCMM shall submit documentation that shows compliance with the fugitive measures to the BLM's Authorized Officer and CPM in each Monthly Compliance Report.

AQ-SC4: The AQCMM shall monitor all construction activities for visible dust plumes.

AQ-SC5: The AQCMM shall submit to the CPM, in the MCR, a construction mitigation report that demonstrates compliance with the mitigation measures for controlling diesel construction-related emissions.

AQ-SC6: The project owner, when obtaining dedicated vehicles for mirror washing activities and other facility maintenance activities, shall only obtain new model year vehicles that meet California on-road vehicle emission standards for the model year when obtained.

AQ-SC7: The project owner shall provide a site operations dust control plan, including all applicable fugitive dust control measures identified in AQ-SC3.

AQ-SC8: The project owner shall provide the CPM copies of all district-issued Authority to Construct (ATC) and Permit to Operate (PTO) for the facility.

AQ-SC9: The emergency generator and fire pump engines procured for this project will meet or exceed the NSPS Subpart IIII emission standards for the model year that corresponds to their date of purchase.

~~AQ-SC10: The ISEGS 1, ISEGS 2, and ISEGS 3 boilers shall not exceed a total annual natural gas fuel heat input that is more than 5 percent of the total annual heat input from the sun for ISEGS1, ISEGS2, and ISEGS 3, respectively.~~