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APPLICANT'S SUPPLEMENTAL RESPONSE TO DATA REQUESTS 8 AND 16: ADDITIONAL INFORMATION REGARDING PUBLIC HEALTH AND SAFETY

In this section of Applicant's Supplemental Response to CEC Staff Data Requests 8 and 16, Applicant describes the changes to the Public Health and Safety section that will result from the changes to the Project Description. Per staff's request, Applicant uses a strike-out/underline format to identify changes to the Public Health and Safety section of the Application for Certification that will result from the changes to the Project Description.

The Public Health and Safety sub-sections that have been modified are listed in the table of contents below. If there has been no change to a Public Health and Safety sub-section relating to Applicant's Supplemental Response to Data Requests 8 and 16, the section is labeled "no changes" in the table of contents below.

TABLE OF CONTENTS

Tables

5.9 PUBLIC HEALTH AND SAFETY

5.9.1 Introduction (see Section 2.1.1 for updated project description)

5.9.2 Laws, Ordinances, Regulations and Standards

Table 5.9-1
Laws, Ordinances Regulations and Standards (LORS) (no changes)

5.9.2.1 Federal

National Environmental Policy Act of 1969

NEPA establishes a public, interdisciplinary framework for Federal agencies reviewing projects under their jurisdiction to consider environmental impacts. NEPA's basic policy is to assure that all branches of government give proper consideration to the environment prior to undertaking any major federal action that significantly affects the environment.

The Bureau of Land Management (BLM), as lead Federal agency for the Project, is responsible for preparation of an Environmental Impact Statement (EIS) in compliance with NEPA to evaluate the environmental impacts of the portions of the Rio Mesa SEGF on federal lands. The ~~Rio Mesa Solar III plant and the~~ Project gen-tie line ~~are~~ is located on lands administered and managed by the BLM. NEPA compliance is required for these portions of the Project through preparation of a Draft and Final EIS. BLM is also responsible for Native American consultation, including government to government consultation.

Clean Air Act (no changes)

Risk Management Plan, 40 Code of Federal Regulations (CFR) Part 68 (no changes)

5.9.2.2 State (no changes)

Warren-Alquist Act (no changes)

California Environmental Quality Act (no changes)

Safe Drinking Water and Toxic Enforcement Act of 1986, California Health & Safety Code §§ 25249.5 et seq. (no changes)

California Accidental Release Prevention Program, California Health & Safety Code, §§ 25531-25541 (Article 2, Chapter 6.95); California Code of Regulations (CCR) Title 19, Division 2, Chapter 4.5 (no changes)

Air Toxics "Hot Spots" Information and Assessment Act, California Health & Safety Code §§ 44360-44366 (no changes)

5.9.2.3 Local (no changes)

Mojave Desert Air Quality Management District Rule 1320, New Source Review For Toxic Air Contaminants (no changes)

5.9.3 Affected Environment

The CEC defines sensitive receptors as infants and children, the elderly, the chronically ill, and any other members of the general population who are more susceptible to the effects of exposure to environmental contaminants than the population at large. For the purposes of this analysis, sensitive receptors are defined as the locations occupied by groups of individuals who may be more susceptible to health risks from a chemical exposure: schools (public and private), day-care facilities, convalescent / nursing homes, retirement homes, health clinics, and hospitals. Because sensitive individuals may be located at any residential site, risk-based standards apply to existing residences and places where residences may be built without a change in zoning as well as sensitive receptors. If Project impacts are protective of sensitive individuals at the point of maximum impact, they are protective at all locations. Identification of sensitive receptors is done to ensure that notice of possible impacts is provided to the community.

No daycare, hospital, park, preschool, or school receptors were found within six miles of the project site.

The nearest residence[1] to the Rio Mesa SEGF property boundary is approximately 8,200 feet (1.55 miles) south of the Rio Mesa I solar array fence line (see Figure 5.7-1 in Section 5.7 Noise). The nearest residence to any power block equipment is approximately ~~13,120~~ 14,760 feet (~~2.48~~ 2.79 miles) east of the Rio Mesa I ~~III~~ power block.

[1] The buildings at this site are not currently inhabited. The Applicant assumes for the purpose of this analysis, that there could be a habitable dwelling at this location.

A variety of studies have been published regarding cancer and respiratory illnesses and diseases in Riverside County and in the broader Mojave Desert Air Basin (MDAB). In addition, the local public health department, Riverside County Health and Human Services, provides information on its website regarding public health issues for county residents (Riverside County, 2011). Asthma diagnosis rates in Riverside County are higher than average rates throughout the state for adults and children (Wolstein et al., 2010). The percentage of adults who have been diagnosed with asthma was 8.8 percent in 2005 and 2007, compared with 7.7 percent of the population statewide. Rates for children were 11.5 percent compared with 10.1 percent statewide for the same time period (Wolstein et al., 2010). Cancer death rates in Riverside County have declined slightly between 2003 and 2007, averaging 174 per 100,000. However, cancer death rates in the county remain slightly higher than the statewide average of 167 per 100,000 population (National Cancer Institute, 2011). According to this website, asthma is triggered by a variety of factors including dust, pollen, smoke, smog, and even cockroaches.

While there are no ambient monitors measuring TACs in the MDAB, there is an ambient monitor in Riverside County in the upwind South Coast Air Basin (SCAB).[2] Air quality and health risk data presented by CARB in the *California Almanac of Emissions and Air Quality – 2009 Edition* (CARB, n.d.) for Riverside County show that over the period 1990 through 2005, the average concentrations for the top ten TACs have been substantially reduced, and the associated health risks are showing a steady downward trend as well. CARB-estimated emissions inventory values for the top ten TACs for 2008 for Riverside County and ambient levels and associated potential risks for Riverside County in the upwind SCAB are presented in Table 5.9-2.

Table 5.9-2
Top Ten Toxic Air Contaminants (TACs) Emitted in the Project Area (no changes)

5.9.4 Environmental Analysis

This section discusses the sources and different kinds of air emissions associated with construction and operation of the Project (see Section 5.1, Air Quality), the methodology used in the HRA, and the results of the assessment of potential health risks from construction and operation of the Project.

Air will be the dominant pathway for potential public exposure to non-criteria pollutants released by the project. Emissions to the air will consist primarily of combustion by-products produced by the boilers and emergency engines. Potential health risks from combustion emissions will occur almost entirely by direct inhalation. To be conservative, additional pathways for dermal absorption, soil ingestion, and mother's milk ingestion were included in the health risk modeling; however, direct inhalation is the dominant

[2] Air pollution transport from the SCAB to the MDAB is discussed in Title 17 CCR §75000, Transport Identification.

exposure pathway. Consistent with OEHHA guidance, because of the remote desert location of the proposed project, the produce and fish pathways were not evaluated.[3]

Combustion byproducts with established national and California ambient air quality standards (referred to as "criteria pollutants") are addressed in Section 5.1, Air Quality. Some discussion of the potential health risks associated with these substances is also presented in this section. Potential public exposure to accidental releases of hazardous materials on the project site during operation is addressed in Section 5.5, Hazardous Materials Handling. To ensure worker safety during operations and construction, safe work practices will be followed (see Section 5.16, Worker Safety).

Project emissions to the air will consist of combustion byproducts from the natural gas-fired boilers. Another source of combustion pollutants will be the routine testing and maintenance of the diesel-fueled emergency generators and the emergency fire water pump engine. Inhalation is the main pathway by which air pollutants can potentially cause public health impacts. Other pathways, including dermal absorption and ingestion of soil, homegrown vegetables, and mother's milk, are also evaluated for potential exposure. As discussed below, these health impacts will not be significant.

Construction emissions are presented in detail in Appendix 5.1F, along with an air dispersion analysis demonstrating that with the exception of the state 24-hour particulate matter (PM) measuring less than 10 microns in diameter (PM_{10}) standard (which is already being exceeded), ambient air quality standards will not be exceeded during Project construction. The dominant emission with potential health risk is diesel PM from combustion of diesel fuel in construction equipment (e.g., cranes, dozers, excavators, graders, front-end loaders, backhoes). A screening-type calculation in Section 5.4 of Appendix 5.1F demonstrates that the potential carcinogenic risk of diesel PM emissions during construction will be less than significant.

5.9.4.1 Significance Criteria

To evaluate potential health risks during Project operation, the measures of these risks are first described in terms of the types of public health effects and the significance criteria and thresholds for those effects.

Significance criteria exist for both cancer and non-cancer risks, and are discussed separately below.

Cancer Risk (no changes)

Non-Cancer Health Impacts (no changes)

Construction Impacts (no expected increase in peak hourly, daily, or annual construction emissions – thus no changes in this section)

[3] *"The other exposure pathways (e.g., the ingestion of homegrown produce or fish) are evaluated on a site-by-site basis. If the resident can be exposed through an impacted exposure pathway, then it must be included in the HRA. However, if there were no vegetable gardens or fruit trees within the zone of impact for a facility, for example, then the produce pathways would not be evaluated."* OEHHA 2003.

Table 5.9-3
Maximum Onsite Diesel Particulate Matter (PM) Emissions During Construction (no changes)

Operations Impacts (no changes)

Table 5.9-4
Air Emitted Pollutants from the Project (no changes)

5.9.4.2 Public Health Impact Study Methods

Emissions of non-criteria pollutants from the project were analyzed using emission factors previously approved by CARB and the United States Environmental Protection Agency (EPA). Air dispersion modeling combined the emissions with site-specific terrain and meteorological conditions to analyze short-term and long-term arithmetic mean concentrations in air for use in the HRA. The EPA-recommended atmospheric dispersion modeling system (AERMOD) was used along with five years (2005–2009) of compatible meteorological data from the Blythe Airport meteorological station. Because HARP is built on a previous EPA-approved air dispersion model, Industrial Source Complex Short Term, Version 3 (ISCST3), the HARP On-Ramp (CARB, n.d.) was used to integrate the air dispersion modeling output from the AERMOD with the risk calculations in the HARP risk module.

Risk Analysis Method (no changes)

Table 5.9-5
Toxicity Values Used to Characterize Health Risks (no changes)

5.9.4.3 Characterization of Risks from Toxic Air Pollutants

The estimated potential maximum cancer risks for the MICR and the MEIW at the location of maximum impact (PMI), and for the MEIR, are shown in Table 5.9-6. The maximum carcinogenic risk is below the MDAQMD's one in-one million threshold at a residential receptor triggering additional analysis and well below the CEC's 10-in-one million threshold of significance.

Cancer risks potentially associated with the project were also assessed in terms of cancer burden. Cancer burden is a hypothetical upper-bound estimate of the additional number of cancer cases that could be associated with emissions from the project. Cancer burden is calculated as the maximum product of any potential carcinogenic risk greater than 1 in one million and the number of individuals at that risk level. Because the MICR is above the 1 in one million threshold in an area that extends only approximately ~~50~~ 170 meters ~~south~~north of the common area fenceline and because there are no residential receptors in this small area, the potential cancer burden is zero.

Table 5.9-6
Summary of Estimated Maximum Potential Health Risks

Receptor	Carcinogenic Risk[a] (per million)	Cancer Burden	Acute Health Hazard Index		Chronic Health Hazard Index
			1-hour	8-hour	
Maximum Incremental Cancer Risk (MICR) and Health Hazard Indexes (HHIs) at Point of Maximum Impact (PMI)	~~1.38~~ 3.6 in one million	0	~~0.003~~ 0.0007	~~0.002~~ 0.0007	~~0.0007~~ 0.0018
MICR and HHIs at Residential Receptors	~~0.10~~ 0.07 in one million	0	0.0003	~~0.00008~~ 0.0002	~~0.00005~~ 0.00004
Maximally Exposed Individual Worker (MEIW) at PMI	~~0.21~~ 0.6 in one million	0	n/a[b]	n/a[b]	n/a[c]
Significance Level	10	1.0	1.0	1.0	1.0

[a] Derived (OEHHA) Method used to determine significance of modeled risks.

[b] Acute analysis is always done as a single point exposure and is not affected by the type of analysis or exposure duration.

[c] The worker is assumed to be exposed at the work location for 8 hours per day, instead of 24; for 245 days per year, instead of 365; and for 40 years, instead of 70. Therefore, a 70-year-based chronic health hazard index is not applicable to a worker.

HHI = Health Hazard Index
MEIW = Maximally Exposed Individual Worker
MICR = Maximum Incremental Cancer Risk
PMI = Point of Maximum Impact

The maximum potential acute non-cancer health hazard indexes for one-hour and eight-hour exposures associated with concentrations in air are shown in Table 5.9-6. As indicated in Table 5.9-6, the acute non-cancer health hazard indexes for all target organs fall well below 1.0, the threshold of significance. Further description of the methodology used to calculate health risks associated with emissions to the air is presented in Appendix 5.1E.

Similarly, the maximum potential chronic non-cancer health hazard index associated with concentrations in air is also shown in Table 5.9-6. The chronic non-cancer health hazard index also falls below 1.0, the threshold of significance.

The estimates of cancer and non-cancer risks associated with chronic or acute exposures thresholds are used for regulating emissions of toxic air contaminants to the air. Historically, exposure to any level of a carcinogen has been considered to have a finite risk of inducing cancer. There is no threshold for carcinogenicity. Because risks at low levels of exposure cannot be quantified directly by either animal or

epidemiological studies, mathematical models have estimated such risks by extrapolation from high to low doses. This modeling procedure is designed to provide a highly conservative estimate of cancer risks based on the most sensitive species of laboratory animal for extrapolation to humans (i.e., the assumption being that humans are as sensitive as the most sensitive animal species). Therefore, the risk is not likely to be higher than risks estimated using inhalation cancer potency factors and is most likely lower, and could even be zero (EPA, 1991).

The analysis of potential cancer risk described in this section employs methods and assumptions generally applied by regulatory agencies for this purpose. Given the importance of assuring public health, this analysis uses highly conservative methods and assumptions, meaning they tend to over-predict the potential for adverse effects. Conservative methodology and assumptions include the following:

- The analysis includes representative weather data over a period of five years to ensure that the least favorable conditions producing the highest ground-level concentration of project emissions are included. The analysis then assumes that these worst-case weather conditions, which in reality occurred only once in five years, will occur continuously for 70 years.
- The Project is assumed to operate at hourly, daily, and annual emission conditions that produce the highest ground-level concentrations.
- The location of the highest ground-level concentration of project emissions is identified and the analysis then assumes that a sensitive individual resides at this location 24 hours a day, 7 days a week over the entire 70-year period, even though these assumptions are physically impossible.

Taken together, these methods and assumptions present a theoretical scenario that is more adverse to human health than conditions that exist in the real world. For example, if the worst-case weather conditions could occur only on a winter evening but the worst-case emission rates could occur only on a summer afternoon, the analysis nonetheless assumes that these events occur at the same time. The point of using these conservative assumptions is to overstate the potential impacts of the Project, so as to be assured that in the worst possible case that the project will not significantly impact public health. No one individual will experience exposures as great as those assumed for this analysis. By determining that even this highly overstated exposure will not be significant, the analysis provides a high degree of confidence that the much lower exposures that actual persons will experience will not result in any significant increase in cancer risk. In short, the analysis ensures that there will not be any significant public health impacts at any location, under any weather condition, under any operating condition.

5.9.4.4 Hazardous Materials (no changes)

5.9.4.5 Operation Odors (no changes)

5.9.4.6 Electromagnetic Field Exposure (no changes)

5.9.4.7 Summary of Impacts (no changes)

5.9.5 Cumulative Effects (no changes)

5.9.6 Mitigation Measures (no changes)

5.9.7 Agencies and Agency Contacts (no changes)

Table 5.9-7
Agency Contacts (no changes)

5.9.8 Permits and Permit Schedule (no changes)

Table 5.9-8
Applicable Permits (no changes)

5.9.9 References (no changes)