6.8 Public Health and Safety

6.8.1 Introduction

Riverside Public Utilities (RPU) proposes to build and operate a nominal 96-megawatt (MW) simple-cycle power plant on a 12-acre fenced site within the City of Riverside, California. This proposed facility is referred to as the Riverside Energy Resource Center (RERC) Project (Project). RPU will develop, build, own and operate the facility. RERC will supply the internal needs of the City of Riverside during summer peak electrical demands and will serve the City's minimum emergency loads in the event RPU is islanded from the external transmission system. No power from RERC will be exported outside of the city.

There are three components of health and safety that overlap with air quality management. The first component, which is summarized in Section 6.8.3, includes an identification of health risks that may be attributed to accidental releases of ammonia (NH_3) from the on-site storage tank. The second component, which is summarized in Section 6.8.4, includes health risks that may be attributed to construction emissions, specifically emissions from diesel-fueled construction equipment. The third component, which is summarized in Section 6.8.5, includes health risks that may be attributed to operation of generation facility, once it is constructed. Section 6.8.7 includes a summary of conclusions and findings relative to the significance of health and safety impacts resulting from the project. Section 6.8.6 includes a list of references.

6.8.1.1 Project Description

The proposed site is owned by the City of Riverside and is located adjacent to the City of Riverside's Wastewater Treatment Plant (WWTP) in a light industrial/manufacturing area. The RERC will consist of two aero-derivative combustion turbine generators with SCRs, an on-site substation, approximately 1.75 miles of 69kV transmission line, natural gas and water supply interconnection, and on-site administration building and warehouse. The power plant and associated administration building and warehouse will occupy approximately 8 of 12 acres with the additional 4 acres reserved for equipment storage and construction parking. The entire plant perimeter will be fenced with a combination of chain-link fencing and architectural block walls.

6.8.2 Laws, Ordinances, Regulations and Standards

An overview of the regulatory process for public health issues is presented in this section.

The relevant laws, ordinances, regulations, and standards (LORS) that affect public health and are applicable to this project are identified in Table 6.8-1. This table also summarizes the primary agencies responsible for public health, as well as the general category of the public health concern regulated by each of these agencies. The conformity of the project to each of the LORS applicable to public health is also presented in this table, as well as references to the locations where each of these issues is addressed.

Table 6.8-1 Summary of Primary Regulatory Jurisdiction for Public Health

Regulation	Purpose	Regulating Agency	Project Conformance
Clean Air Act (CAA)	Regulates public exposure to various air pollutants.	USEPA CARB	Based on the results of the risk assessment, toxic air pollutants do not exceed significance thresholds (see Section 6.1.8).
		SCAQMD	Emissions of criteria pollutants will be minimized by applying BACT to the facility. Increases in emissions will be offset in accordance with SCAQMD requirements (see Section 6.1.9.3).
California Health and Safety Code 25249.5 (Proposition 65)	Regulates public exposure to chemicals known to cause cancer or reproductive toxicity.	OEHHA	Based on the results of the risk assessment, toxic air pollutants do not exceed significance thresholds (see Section 6.1.8).
40 CFR Part 68 (Risk Management Plan) and Health and Safety Code 25531 to 25541	Regulates public exposure to acutely hazardous materials.	USEPA OES Riverside Fire Department	A hazard analysis was conducted to assess potential risks from a spill or rupture of the aqueous ammonia storage tank (see Section 6.5.1).
California Health and Safety Code 44360 to 44366 (AB2588)	Regulates public exposure to toxic air contaminants	CARB OEHHA SCAQMD	Based on the results of the risk assessment, toxic air pollutants do not exceed significance thresholds (see Section 6.1.8).

6.8.3 Aqueous Ammonia Hazard Assessment

The Clean Air Act and the California Accidental Release Program (CalARP) regulations require an assessment of the hazards associated with an accidental release of a regulated substance such as ammonia. However, because of the size of the ammonia storage tank (12,000 gallons) and the concentration of the material (19 percent aqueous solution), the

facility is not required to prepare a federal Risk Management Plan (RMP). Furthermore, the City of Riverside Fire Department Certified Unified Program Agency (CUPA), which administers the State CalARP program, also does not require an RMP for the Riverside Energy Resource Center. Nevertheless, a hazard assessment that includes an analysis of the worst-case accidental aqueous ammonia release scenario as defined under CalARP Program Level 1 was prepared and the results are presented herein.

6.8.3.1 Hazard Assessment Parameters

The model used to analyze the worst-case release is RMP Comp (ver 1.07), which has been provided by the U.S. EPA to simply and efficiently analyze accidental release scenarios. The model was used with all standard U.S. EPA defaults. Model inputs and outputs can be found in Appendix 6.8-A.

Table 6.8.1 provides a summary of the parameters used in the aqueous ammonia hazard assessment. The project owner supplied several of the parameters used in the analysis while other parameters were components the RMP Comp model. Table 6.8.2 also provides information on the sources of the parameters used in the analysis.

6.8.3.2 Worst-Case Release Analysis

The aqueous ammonia storage tank to be located at the facility has a storage capacity of 12,000 gallons. The worst-case release would be a rupture of this tank thereby releasing 12,000 gallons of 19 percent aqueous ammonia solution. The ammonia storage system includes containment structures that were accounted for in the analysis.

The results of the worst-case release analysis indicate that the toxic endpoint for a 12,000-gallon aqueous ammonia release would be approximately 0.2 mile (0.3 km). This distance would be measured from the point of release (storage tank) at the facility to the endpoint, which is the point at which the ambient ammonia concentration from the accidental release falls below 0.14 mg/L. It should be noted that ammonia vapor is six-tenths the density of air (much lighter) and if an accidental release would occur it would immediately rise above ground level thereby reducing some of the inhalation risk.

6.8.3.3 Offsite Impacts to the Population

A site visit and an examination of relevant maps and census data were used to determine the exposed population from the worst-case release scenario. The radial distance to the endpoint is 0.2 mile. Appendix 6.8-A contains a map showing the 0.2-mile worst-case release radial impact area. The exposed population receptors that fall within the radial impact area are discussed below.

Workplace Receptors

Several small businesses are located within the 0.2-mile radial impact area. They are located just south and east of the Riverside Energy Resource Center. In addition, the City of Riverside wastewater treatment plant falls just inside the western edge of the impact area. The area to the north of the facility consists of the Santa Ana River floodplain where no receptors exist.

Residential Receptors

Results of the census data research, map search and site survey indicate that there are no residential receptors living within the 0.2-mile worst-case release radial impact area.

Sensitive Receptors

Results of the map search and site survey indicated that there are no sensitive receptors (i.e., hospitals, schools, day care facilities) located within the 0.2-mile worst-case release radial impact area.

6.8.3.4 Mitigation and Emergency Response

The facility is not required to prepare a detailed emergency response plan under CalARP Program Level 1. However, the facility will prepare the state-required Business Emergency Plan (BEP) and in the event of a large accidental release of ammonia, the City of Riverside Fire Department will be the first responder. RERC's personnel will perform "awareness duties" only, which means that once the ammonia spill or release is discovered, operating personnel will make the proper notifications and set the emergency procedures in motion. The Fire Department will address leak containment. In the event of a major release, Riverside Energy Resource Center personnel will assist the Fire Department to contain the emergency as requested.

Riverside Energy Resource Center's prevention program consists of:

- Proper maintenance of all system equipment
- Proper operation of all system equipment
- Internal operating policies with respect to ammonia tank capacity
- Comprehensive personnel training
- A written emergency response plan
- A written hazardous materials management plans
- Documented safety procedures for employees and contractors
- Inclusion of ammonia specific health, safety, and response data into response plans
- Vapor recovery for ammonia delivery trucks

Table 6.8-2 Aqueous Ammonia Hazard Assessment Parameters RERC

Parameter	Description		Source of Information
Tank Size	12,000 Gallons		Project Owner
Ammonia	<20% Solution	CAS# 7664-41-7	Project Owner
Category	Toxic Liquid		-
Scenario	Worst-Case		SCEC

Parameter	Description		Source of Information
Quantity Released	12,000 Gallons		SCEC
Release Rate	15.8 lbs/minute		Calculated by RMP Comp.
Mitigation Measure	Containment Dikes		Project Owner
Topography	Rural		SCEC
Toxic Endpoint	0.14 mg/L		Calculated by RMP Comp.
Wind Speed	1.5 m/second	3.4 miles/hour	Calculated by RMP Comp.
Stability Class	F		Calculated by RMP Comp.
Air Temperature	77 F		SCEC
Model	RMP Comp (ver 1.07)		-
Distance to Toxic Endpoint	0.2 Miles	0.3 km	Calculated by RMP Comp.

6.8.4 Health Risk Impacts from Construction Emissions

Table 6.8.3 includes a summary of the results of the screening level health risk assessment for the construction project. The MEI receptor is located at the project fence line on Payton Avenue. The screening level health risk assessment for construction operations reflects daily maximum diesel particulate emissions over the entire duration of the construction project. In accordance with CARB guidelines, the assessment considers both cancer risk and acute health risks. The cancer risk calculations contained in the CARB Hotspots Analysis and Reporting Program (HARP) model reflect a 70-year lifetime exposure. The model results were divided by 70 in order to more accurately reflect the impacts of a short-term project.

Health risks will be mitigated during construction activities through several measurers, including the use of ultra-low sulfur fuel and the use of certified non-road engines to reduce diesel particulate emissions. The assessment results indicate that health risks attributed to the construction projects with mitigated emissions are well below a level of significance. Detailed assessment data are included in Section 6.1.8 and in Appendix 6.1-J of Section 6.1.

Table 6.8-3 Summary of Health Risk Analysis Construction Activity Point

Maximum Impact – MEI Riverside Energy Resource Center		
Hazard Description	**Results**	**Significance Threshold**
Maximally Exposed Individual		
MICR	6.22×10^{-07}	10×10^{-06}
Chronic Hazard Index	0.00215	1.0

6.8.5 Health Risk Impacts from Facility Operations

Table 6.8.4 includes a summary of the screening health risk assessment results for the operation of the facility. Detailed assessment data are included in Section 6.1.8 and Appendix 6.1-J of Section 6.1. The assessment reflects modeled dispersion rates of toxic compounds from the two gas turbines and the cooling tower. Emissions from the cooling tower reflect the use of reclaimed water and reflect the presence of chemicals that are typically found in cooling water treatment products. Because the dispersion characteristics of gas turbines differ greatly from those of cooling towers, two screening dispersion modeling assessments were completed to identify potential MEI locations. The final dispersion model included two discrete receptors. The location of the first receptor is dependent by the gas turbine emissions. The second receptor location is dependent on the cooling tower emissions. The final analysis indicates that the highest MEI is dependent upon turbine operations. This MEI MICR receptor is located near the facility fence line on Payton Avenue.

Health impacts will be mitigated through several measures. First, the gas turbines will burn natural gas and will be equipped with a CO oxidization unit. The oxidization unit will control up to 85 percent of organic toxic emissions resulting from turbine combustion. Second, reclaimed water will be demineralized, thereby reducing a portion of metals that may otherwise be emitted into the atmosphere.

The MICR results reflect a 70-year exposure period with no adjustments for limited workplace exposure. Significance thresholds reflect SCAQMD Rule 1401. Resulting mitigated health risks at both receptor locations are well below the established level of significance.

Both short-term and long-term health risk assessment results reflect the operation of both turbines at 100% load 85% organic compound destruction efficiency via the oxidization catalyst. Under these conditions the acute hazard index is 0.00596, versus a significance threshold of 1.0. If the assessment were conducted for both turbines operating at 100% load, but without installation of the oxidization catalyst, the acute hazard index would be 0.0015. These results indicate that both turbines can be operated simultaneously for short

periods during commissioning, startup and maintenance operations without causing health impacts in excess of established significance thresholds.

Table 6.8-4 Summary of Health Risk Analysis Generating Station Operations

Point of Maximum Impact – MEI Riverside Energy Resource Center		
Hazard Description	**Results**	**Significance Threshold**
Maximally Exposed Individual Turbine Dominated		
MICR	3.74×10^{-08}	10×10^{-06}
Chronic Hazard Index	0.00261	1.0
Acute Hazard Index	0.00596	1.0
Maximally Exposed Individual Cooling Tower Dominated		
MICR	1.83×10^{-07}	10×10^{-06}
Chronic Hazard Index	0.000282	1.0
Acute Hazard Index	0.000232	1.0

6.8.6 Agency Contacts

Agency	Name/Title	Address	Phone Number
Riverside County Community Health Agency, Dept. of Env. Health	Paul Tavares Deputy Director	4065 County Circle Dr. Riverside, CA 92503	(909) 358-5055
City of Riverside Fire Department,	Joan Ledbetter Fire Marshal	3775 Fairmount Blvd. Riverside, CA 92501	(909) 826-5321

6.8.7 Summary and Conclusions

Three air quality components of the proposed project potentially have health and safety impacts. These components include the risk of an accidental release of NH_3, and health risks attributed to toxic emissions from project construction and operations. An analysis of the risks attributed the project indicate that risks can be mitigated to levels that are below established thresholds of significance.