Draft Initial Study

RIVERSIDE ENERGY RESOURCE CENTER UNITS 3 & 4

Small Power Plant Exemption (08-SPPE-1)
Riverside County

CALIFORNIA
ENERGY
COMMISSION

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STAFF REPORT

NOVEMBER 2008
(08-SPPE-1)
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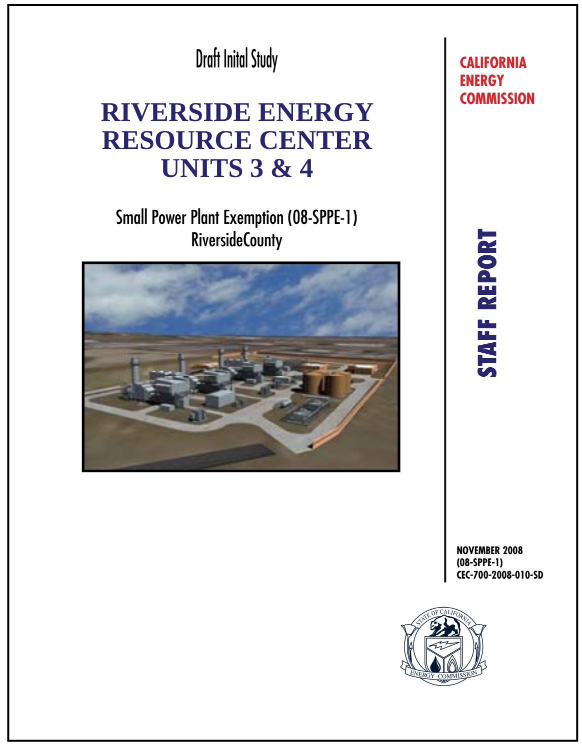
Draft Inital Study

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CALIFORNIA ENERGY COMMISSION

STAFF REPORT

NOVEMBER 2008
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CALIFORNIA ENERGY COMMISSION

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RIVERSIDE ENERGY RESOURCE CENTER (08-SPPE-1)
DRAFT INITIAL STUDY

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Felicia Miller

This Draft Initial Study contains the California Energy Commission staff's evaluation of the City of Riverside Public Utilities Department's Application for a Small Power Plant Exemption (08-SPPE-1).

The Energy Commission has the exclusive power to certify all sites and related facilities for thermal electrical power plants of 50 MW or larger within the state. A provision of the Warren-Alquist Act allows the Energy Commission to exempt power plants up to 100 MW from the site certification process if it finds that no substantial adverse impact on the environment or energy resources will result from the construction or operation of the proposed facility. Under this exemption process the Energy Commission prepares the environmental document that will be used by local and state agencies that issue the necessary permits.

In this draft Initial Study, staff examined the direct, indirect and cumulative environmental, public health and safety, and transmission systems engineering aspects of the Riverside Public Utilities Units 3 & 4 (RERC 3&4) project and presents its conclusions and proposed conditions of exemption that staff believes are necessary to mitigate or avoid significant adverse environmental impacts of the proposed facility, if exempted by the Commission.

BACKGROUND

On March 19, 2008, City of Riverside Public Utilities Department (RPU) filed an application for a Small Power Plant Exemption (08-SPPE-1), and staff began its review of the project. The Energy Commission appointed a Siting Committee on April 16, 2008, to oversee the SPPE application.

The analyses contained in this draft Initial Study are based upon information from: 1) the SPPE Application for the RERC; 2) the applicant's responses to data requests from both Energy Commission; 3) interested federal, state, and local agencies; 4) various documents and publications listed at the end of each section and; 5) public workshops and site visits.

The Energy Commission has made a substantial effort to notify interested parties and encourage public participation. The Energy Commission has:

- Mailed Notices of Receipt to interested parties, local libraries, responsible and trustee agencies, and contiguous property owners on April 11, 2008;
- Mailed a Notice of Public Hearing and Site Visit on April 24, 2008 to responsible and trustee agencies, persons with contiguous property to the proposed project, sensitive receptors, larger (>100 employees) private businesses in the area and individuals that have expressed interest in the project;
- Placed an advertisement notice in the Riverside Press Enterprise on May 4, 2008 and the La Prensa, the Spanish-language weekly paper on May 9, 2008 to announce the Public Hearing and Site Visit and placed 1,000 copies of the bilingual

notice to various public facilities, including libraries, community and shopping centers and contacted the major English and Spanish-language radio and TV stations and requested public service announcements for the informational hearing;

- Conducted an Informational Hearing and Site Visit on May 12, 2008;
- Held Public Workshops on June 26 and July 1, 2008.

PROJECT DESCRIPTION

The City of Riverside, Riverside Public Utilities (RPU) proposes to build, own, and operate two simple cycle units at its Riverside Energy Resource Center (RERC) within the City of Riverside, California. The proposed gas-fired peaking project is an expansion of an existing 96 MW peaking facility exempted by the Energy Commission in 2004, which began operation in June 2006. The two new units, RERC 3&4, would be located adjacent to the first two units. RERC 3&4 would supply internal peaking needs of the City of Riverside primarily during summer peak electrical demands.

The proposed project site is owned by the City of Riverside and is located adjacent to and on the east side of the Riverside Regional Water Quality Control Plant (RRWQCP) in a light industrial/manufacturing area. RERC 3&4 would be located immediately north of Units 1&2 and would occupy approximately 2.2 acres of the 16 acre RERC site. The remaining rough graded, undeveloped portion of the project site would be used for construction laydown (approximately 5 disturbed acres in total). (**See Project Description**)

RERC 3&4 would consist of two LM6000 PC SPRING NxGen combustion turbine generators with Emission Control Modules (ECMs), and the addition of two more bays to the existing make-up water system. Fin-fan coolers would be used for lube cooling instead of relying on the cooling tower.

The primary source of raw water for the RERC 3&4 would be reclaimed water supplied by the City's RRWQCP. Potable water would not be used for plant process water needs during normal plant operations. RERC 3&4 would have the capability to use potable water as a backup for process needs in an emergency situation. In addition, the plant would recycle all process wastewater. The storm water management system will be integrated with the existing RERC, which collects and routes storm water to an on-site detention basin using a peripheral channel.

The proposed project would be interconnected to the City of Riverside's 69kV sub-transmission system at the existing RERC switchyard. The switchyard would be expanded to add two more bays for connection of the two new generators. No new transmission facilities would be added as part of the project.

A more complete description of the project, including a description and maps of the proposed project is contained in the **PROJECT DESCRIPTION** section of this Draft Initial Study.

STAFF'S ASSESSMENT

Each technical area section of the draft Initial Study contains a discussion of impacts, and where appropriate, mitigation measures presented in the form of conditions of exemption. The Draft Initial Study includes staff's discussion of:

- The environmental setting surrounding the project area;
- Potential impacts to public health and safety, and measures proposed to mitigate these impacts; and
- Potential environmental impacts and measures proposed to mitigate these impacts.

STAFF CONCLUSIONS

The staff has concluded that, with the mitigation measures proposed by the applicant and the measures recommended herein, the RERC 3&4 project will not result in any significant direct, indirect or cumulative impacts to public health, safety energy resources or the environment.

Summary of Conclusions: Environmental and Engineering Checklist

	Potentially Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
ENVIRONMENTAL				
Air Quality		X		
Biological Resources		X		
Cultural Resources				X
Energy Resources				X
Geology and Paleontology				X
Hazardous Materials and Waste				X
Land Use, Recreation & Agriculture				X
Noise		X		
Public Health		X		
Socioeconomics				X
Soil and Water		X		
Traffic & Transportation		X		
Visual Resources				X
Waste Management				X
ENGINEERING				
Transmission Line Safety & Nuisance			X	
Transmission System Engineering				X

ENVIRONMENTAL JUSTICE

The minority population within six-miles of the site is 57.46 percent, which is slightly higher than the 54.4 percent minority population of the City of Riverside and the state. The population below the poverty level is 14.99 percent within six miles of the site, which is lower than the 15.8 percent for the City of Riverside, but somewhat more than that of the state. Staff's analysis indicates there would be no significant direct or cumulative impact to any population including areas with high concentrations of minority or low-income people.

INTRODUCTION

Felicia Miller

PURPOSE OF THIS REPORT

The applicant, Riverside Public Utilities (RPU) filed a request for a Small Power Plant Exemption (SPPE) with the California Energy Commission (Energy Commission) on March 19, 2008.

California's Warren-Alquist Act (Pub. Resources Code (PRC) § 25000 et seq.) gives the Energy Commission the exclusive power to certify all sites and related facilities for thermal electrical power plants of 50 MW or more within the state (Pub. Resources Code § 25120 and 25500 et seq.). Section 25541 of the Warren-Alquist Act allows the Energy Commission to exempt power plants up to 100 MW from the site certification process if it finds that no substantial adverse impact on the environment or energy resources will result from the construction or operation of the proposed facility.

The proposed plant is also subject to the requirements of the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). Public Resources Code section 25519 (c) states that the Energy Commission shall act as lead agency under CEQA for projects that it either certifies or exempts from certification. Staff has prepared this Initial Study in accordance with CEQA and Title 20, California Code of Regulations (CCR) § 1934 et seq. and 2300 et seq.

Staff's environmental analysis in the draft Initial Study documents the factual basis for staff's recommendation regarding the project's potential to result in substantial adverse impacts on the environment or energy resources.

Staff has included Conditions of Exemption in various technical areas, which if implemented along with the Applicant's proposed mitigation measures, should ensure that the project would result in no substantial adverse impact. In addition, staff will adopt a reporting or monitoring program designed to ensure compliance during project development and avoid significant impacts or the need for further mitigation.

The Energy Commission's Siting Committee (Committee) will conduct a hearing at which all parties will have an opportunity to comment on the draft Initial Study and make recommendations for the final Initial Study. The Committee will consider the application, staff's analysis, and any other evidence presented in the proceedings to determine whether to recommend granting the SPPE. Following the hearing, the Committee will prepare and publish a proposed decision. The full Commission will then hold a hearing for final arguments and render a decision on the application.

Title 14, California Code of Regulations, section 15063 (d) states that an Initial Study shall contain the following items:

- A description of the project including the location of the project;
- An identification of the environmental setting;

- An identification of environmental effects by use of a checklist, matrix, or other method, provided that entries on a checklist or other form are briefly explained to indicate that there is some evidence to support the entries;
- A discussion of the ways to mitigate the significant effects identified, if any;
- An examination of whether the project would be consistent with existing zoning, plans, and other applicable land use controls; and
- The name of the person or persons who prepared or participated in the Initial Study.

The Energy Commission has made a substantial effort to notify interested parties and encourage public participation. The Energy Commission has:

- Mailed Notices of Receipt to interested parties, local libraries, responsible and trustee agencies, and contiguous property owners on April 11, 2008 for the Application for Small Power Plant Exemption;
- Mailed a Notice of Public Hearing and Site Visit on April 24, 2008 to responsible and trustee agencies, persons with contiguous property to the proposed project, sensitive receptors, larger (>100 employees) private businesses in the area and individuals that have expressed interest in the project;
- Placed an advertisement notice in the Riverside Press Enterprise on May 4, 2008 and a Spanish version of the notice in the May 9, 2008 issue of the La Prensa, the Spanish-language weekly paper of the Riverside Press Enterprise to announce the Public Hearing and Site Visit. In addition, distributed 1,000 copies of the bilingual notice to various public facilities located within six miles of the project site. Local English and Spanish-language radio and TV stations broadcasting in the City of Riverside area were contacted and requested to provide public service announcements on the May 12 workshop;
- Conducted an Informational Hearing and Site Visit on June 12, 2008;
- Conducted a Data Response Workshop in the City of Riverside on June 26, 2008, with a continuation of the workshop in Sacramento on July 1, 2008.

PROJECT DESCRIPTION

Felicia Miller

PROJECT TITLE

The City of Riverside Public Utilities, Riverside Energy Resource Center, Units 3 & 4 Application for Small Power Plant Exemption (08-SPPE-1).

LEAD AGENCY NAME AND ADDRESS

California Energy Commission
Siting, Transmission, and Environmental Protection Division
1516 Ninth Street
Sacramento, CA 95814

PROJECT LOCATION

The City of Riverside Public Utilities Department (RPUD) proposes to build and operate a nominal 95 megawatt (MW) simple-cycle power plant on a 12-acre fenced site located at 5950 Acorn Avenue within the City of Riverside, California. This proposed facility will be adjacent to the existing Riverside Energy Resource Center Units 1 & 2 (RERC 1&2), which became operational in 2006. RPUD would develop, build, own and operate the facility. **(See Project Description Figure 1).**

PROJECT APPLICANT'S NAME AND ADDRESS

Riverside Public Utilities Department
3900 Main Street
Riverside, CA 92522

GENERAL PLAN DESIGNATION

Jurupa Area Land Use Plan (City of Riverside General Plan)

ZONING

Business and Manufacturing Park, (BMP)

DESCRIPTION OF PROJECT

On March 19, 2008, RPUD filed an application for a Small Power Plant Exemption (SPPE). RPUD is seeking an exemption from the California Energy Commission's licensing requirements. If an exemption is granted, the applicant would need to secure the appropriate licenses and permits for the project from various local, state and federal agencies.

RPUD proposes to build and operate a nominal 95 MW simple-cycle power plant called the Riverside Energy Resource Center, Units 3 & 4 (RERC 3&4). RPUD would develop, build, own, and operate the RERC to serve residential, industrial, and commercial customers in the City of Riverside exclusively.

The proposed project is an expansion of an existing 96 MW peaking facility exempted by the Energy Commission in 2004, which began operation in June 2006. The two new units, RERC 3&4, would be located adjacent to the existing units. **(See Project Description Figure 2)**

The proposed project would consist of two General Electric LM6000 PC SPRINT NxGen combustion turbine generators with Emission Control Modules (ECMs) equipped with inlet air chiller coils, exhaust ducting, flue gas treatment system, emission monitoring system, a common chiller package with cooling tower, and gas compressor equipment. Two new bays will be added to the existing RERC switchyard and two demineralized water storage tanks to the existing make-up water system. Fin-fan coolers would be used for lube oil cooling instead of relying on the cooling tower, which will result in a slight reduction of water usage**.**

PROJECT SITE AND LOCATION

The proposed project will be constructed on 2.2 acres of the existing RERC property at 5950 Acorn Avenue. The site is owned by the City of Riverside and is located adjacent to the Riverside Regional Water Quality Control Plant (RRWQCP) in a light industrial / manufacturing area. Units 3 & 4 will be located immediately north of the existing plant and east of RRWQCP. **(See Project Description Figure 3)**

The RERC site, natural gas, short transmission tie-in line, and water pipeline, and storm water control facilities are within the existing 16 acre RERC site. **Project Description Figure 4** is a map of the RERC site showing the construction lay down area, enlarged storm water retention basin, in addition transmission line, potable and recycled water supply line, and gas line connection locations are shown, these are described in detail below.

WATER SUPPLY AND USE

Annual water usage is estimated at 24.394 million gallons per year based at 2,460 hours of operation or approximately 74.867 acre/feet of water annually. Potable water for sanitary use would come directly from the City’s general water supply line approximately 60 feet from the southwest corner of the site located in Acorn Avenue. The adjacent RRWQCP would supply tertiary-treated reclaimed water for plant process water. The project would utilize a Zero Liquid Discharge (ZLD) system that would eliminate the need to discharge process wastewater to the RRWQCP.

STORM WATER

The RERC 3&4 project will utilize the same storm water management system as RERC 1&2, which collects and routes storm water to an on-site detention basin using a peripheral canal. The storm water retention basin is sized to contain the difference in runoff volume between pre and post development of the site for a 100-year storm event and would has an open bottom for infiltration.

TRANSMISSION

The RERC 3&4 project will connect to the existing RERC switchyard. The switchyard will be expanded to add two or more bays for connection of the two new generators. Transmission upgrades would include additional breakers at the 69kV switchyard. No new transmission facilities outside of the existing RERC property are being proposed as part of this project.

NATURAL GAS

Natural gas fuel will be supplied to RERC 3&4 through an existing Southern California Gas metering station on the site, which currently serves RERC 1&2. The onsite natural gas pipeline has a maximum Allowable Operating Pressure of (MAOP) of 584 psig and an operating pressure that varies between 350 and 537 psig.

Three fuel gas compressors, each of which is capable of supplying the needs of one of the two new Units, would be installed to boost the natural gas pressure to the minimum pressure of 725 psig to provide adequate pressure at the CTG packages. Inlet scrubbers and a common outlet coalescing filter will remove particulate matter and condensate from the fuel gas.

The CTG packages will be supplied with a natural gas fuel system that utilizes an electronically controlled fuel-metering valve. For full-load operation, the gaseous fuel must be supplied to the CTG at no less than 675 psig ± 20 psig.

COMBUSTION TURBINE GENERATOR

The plant would consist of two General Electric LM6000 PC NxGen combustion turbine generators (CTG) with a SPRINT Power Boost System in a simple cycle configuration. The plant would have a nominal 95 MW net output after an on-site 4 MW plant parasitic load. Demineralized water would be injected into the engines for both power augmentation (as part of the SPRINT system) and No_x emissions control.

EMISSION CONTROLS

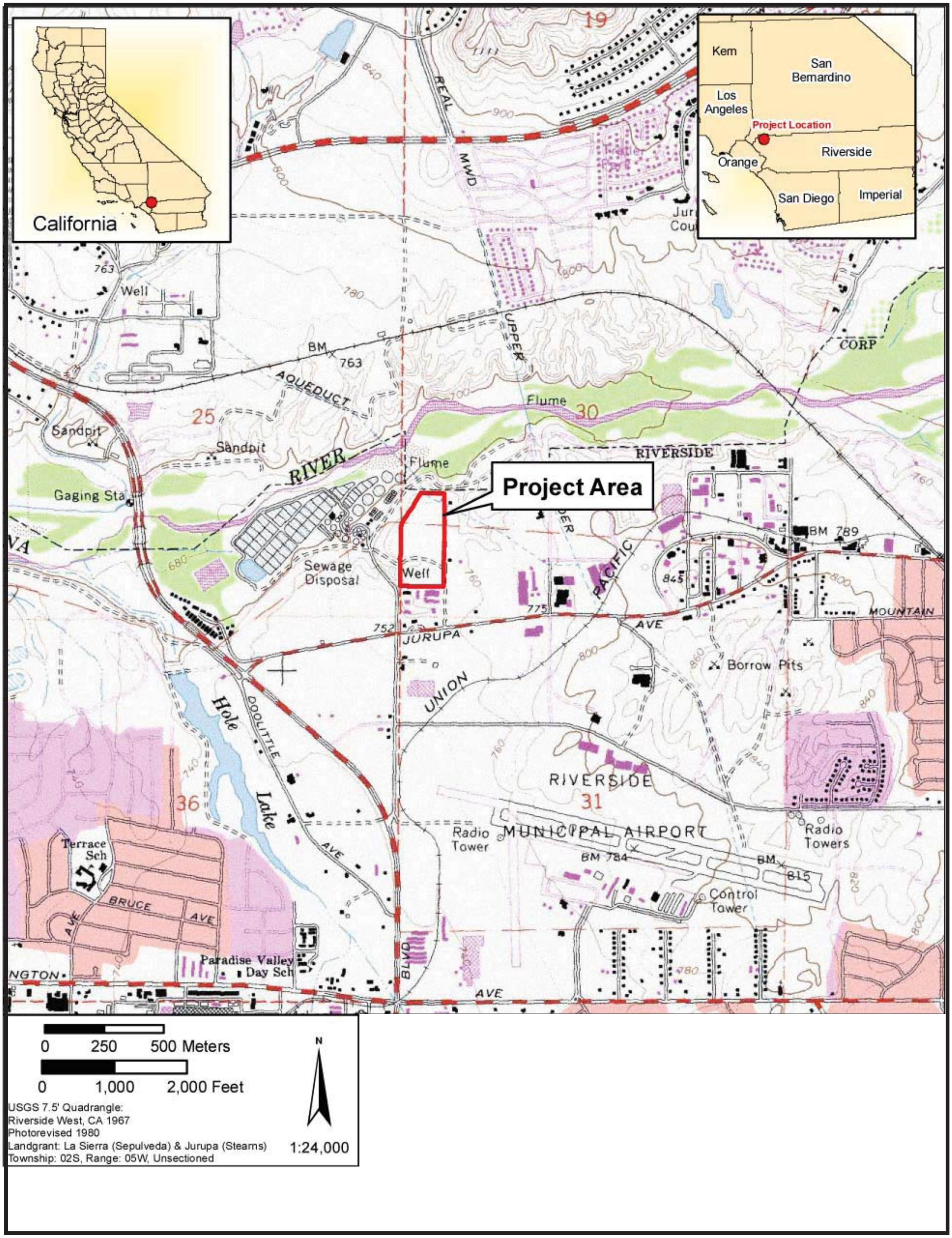
The RERC project would be equipped with Best Available Control Technology (BACT) to control air pollutant emissions. These controls include a water injection system to reduce the nitrogen oxide (NO_x) emissions from the CTG exhaust and a NO_x Selective Catalytic Reduction (SCR) to reduce emissions to 2.5 parts per million volume dry (ppmvd) at full load. The SCR system uses aqueous ammonia as a reagent for an ammonia injection system and an oxidation catalyst to maintain a CO emission limit of 6.0 ppm in all operating conditions. In addition, there would be a continuous emission monitoring system for the exhaust stack.

CONSTRUCTION SCHEDULE AND WORKFORCE

If exempted by the Energy Commission, RPU expects to begin construction of the project by the first quarter of 2009 and begin commercial operation of the first unit by the fourth quarter of 2009. Completion of the second unit would follow as soon as possible after the first unit is available for dispatch.

RPU estimates the capital costs of the RERC to be $110 million. RPU expects to employ up to approximately 100 construction workers at the peak of construction over the 9-month construction schedule. A permanent professional workforce of approximately 5 people would operate the plant. Construction payroll costs are estimated to be $6.8 million.

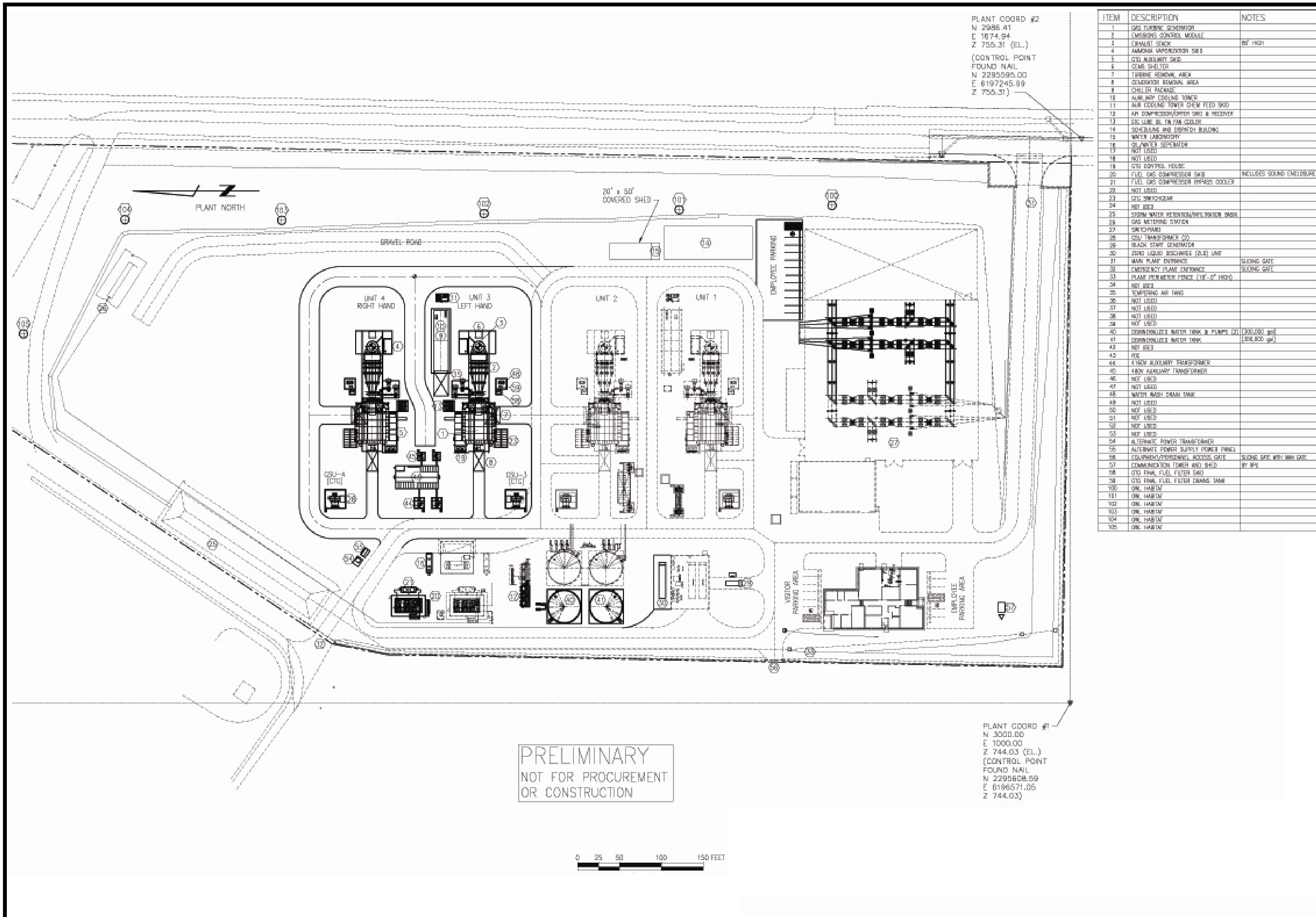
PROJECT DESCRIPTION - FIGURE 1
Riverside Energy Resource Center Units 3 & 4 - Project Location Map



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION, NOVEMBER 2008
SOURCE: 08-SPPE -1, Figure 6.3-1

PROJECT DESCRIPTION - FIGURE 2

Riverside Energy Resource Center Units 3 & 4 - Site Arrangement



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION, NOVEMBER 2008

SOURCE: 08-SPPE-1, Figure 2-13- REV A

View of the southeastern portion of the RERC Units 3&4 project area, facing southwest. The existing structures in view are RERC Units 1&2

View of the northern portion of the RERC complex, facing southwest. The gravel lot in the view is the proposed location of RERC Units 3&4

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION, NOVEMBER 2008
SOURCE: SPPE- Figure 6.6-3 and 6.6-4

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION, NOVEMBER 2008
SOURCE: 08-SPPE -1, Figure 2.1-1

AIR QUALITY

Testimony of William Walters

SUMMARY OF CONCLUSIONS

The Riverside Energy Resource Center Units 3&4 Project (RERC 3&4) should comply with all applicable Laws, Ordinances, Regulations, and Standards (LORS) after it has been permitted by the South Coast Air Quality Management District, and should not result in significant air quality impacts provided the recommended conditions of certification are adopted by the Commission and implemented by the project owner. The project has secured required Nitrogen Oxides (NOx) RECLAIM credits and particulate matter (PM10) emission reduction credits required by the South Coast Air Quality Management District, and has obtained additional Reactive Organic Gases (ROG) emission reduction credits. Therefore, with the secured credits the project has fully offset its emissions of nonattainment pollutants and their precursors at a minimum ratio of 1:1.

Staff has assessed both the potential for localized impacts and regional impacts for the project's construction and operation, and as a product of this analysis staff has recommended construction mitigation and monitoring requirements that should provide adequate mitigation and monitoring sufficient to reduce the adverse construction emission impacts to less than significant.

Global climate change and greenhouse gas (GHG) emissions from the project are discussed and analyzed. The RERC 3&4 Project provides an efficient source of peak power for the City of Riverside, and as a peaking project with an enforceable operating limitation less than 60 percent of capacity, is not subject to the requirements of SB1368 and the Emission Performance Standard. Staff recommends reporting of the GHG emissions as the Air Resources Board develops greenhouse gas regulations and/or trading markets. The project may be subject to additional reporting requirements and GHG reductions as these regulations become more fully developed and implemented.

INTRODUCTION

This analysis evaluates the expected air quality impacts of the emissions of criteria air pollutants due to the construction and operation of the proposed Riverside Energy Resource Center Units 3&4 by the City of Riverside Public Utilities (applicant). The RERC 3&4 would be located adjacent to the existing RERC 1&2 in the City of Riverside, just south and east of the City of Riverside's Wastewater Treatment Plant.

Criteria air pollutants are defined as those air contaminants for which the state and/or federal government has established an ambient air quality standard to protect public health. The criteria pollutants analyzed are nitrogen dioxide (NO_2), sulfur dioxide (SO_2), CO, ozone (O_3), PM10, and PM2.5. In addition, VOC emissions are analyzed because they are precursors to both O_3 and particulate matter. Because NO_2 and SO_2 readily react in the atmosphere to form other oxides of nitrogen and sulfur respectively, the terms nitrogen oxides (NOx) and sulfur oxides (SOx) are also used when discussing these two pollutants.

In carrying out the analysis, the California Energy Commission staff evaluated the following major points:

- Whether RERC 3&4 is likely to conform with applicable Federal, State and South Coast Air Quality Management District (SCAQMD or District) air quality laws, ordinances, regulations and standards (Title 20, California Code of Regulations, section 1744 (b));
- Whether RERC 3&4 is likely to cause significant air quality impacts, including new violations of ambient air quality standards or contributions to existing violations of those standards (Title 20, California Code of Regulations, section 1742 (b)); and
- Whether the mitigation proposed for RERC 3&4 is adequate to lessen the potential impacts to a less than significant level (Title 20, California Code of Regulations, section 1742 (b)).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local laws and policies pertain to the control of criteria pollutant emissions and mitigation of air quality impacts. Staff's analysis examines the project's compliance with these requirements.

AIR QUALITY Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
40 Code of Federal Regulations (CFR) Part 52	Nonattainment New Source Review (NSR) requires a permit and requires Best Available Control Technology (BACT) and offsets. Permitting and enforcement delegated to SDAPCD. Prevention of Significant Deterioration (PSD) requires major sources to obtain permits for attainment pollutants. A major source for a simple-cycle combustion turbine is defined as any one pollutant exceeding 250 tons per year. Since the emissions from RERC 3&4 would not exceed 250 tons per year, PSD does not apply.
40 CFR Part 60 Subpart KKKK	New Source Performance Standard (NSPS) for gas turbines: 15 parts per million (ppm) NOx at 15% O_2 and fuel sulfur limit of 0.060 lb SOx per million Btu heat input. BACT would be more restrictive.
40 CFR Part 70	Title V: federal permit. Title V permit application is required within one year of start of operation. Permitting and enforcement delegated to SCAQMD.
40 CFR Part 72	Acid Rain Program. Requires permit and obtaining sulfur oxides credits. Permitting and enforcement delegated to SCAQMD.

State	
Health and Safety Code (HSC) Section 40910-40930	Permitting of source needs to be consistent with Air Resource Board (ARB) approved Clean Air Plans.
HSC Section 41700	Restricts emissions that would cause nuisance or injury.

Local – South Coast Air Quality Management District (SCAQMD) Rule and Regulations	
Regulation II: Permits	This regulation sets forth the regulatory framework of the application for and issuance of construction and operation permits for new, altered, and existing equipment.
Regulation IV: Prohibitions	This regulation sets forth the restrictions for visible emissions, odor nuisance, fugitive dust, various air emissions, fuel contaminants, start-up/shutdown exemptions and breakdown events.
Regulation VII: Emergencies	Establishes the procedure for reporting emergencies and emergency variances.
Regulation IX: Standards of Performance for New Stationary Sources	Regulation IX incorporates provisions of 40 CFR Part 60, Chapter I, and is applicable to all new, modified, or reconstructed sources of air pollution. Sections of this regulation apply to stationary gas turbines (Subpart KKKK). These subparts establish limits of SO_2 and NO_2 emissions from the facility as well as monitoring and test method requirements.
Regulation XI: Source Specific Standards	Specifies the performance standards for stationary engines larger than 50 brake horse power (bhp)
Regulation XIII: New Source Review	Establishes the pre-construction review requirements for new, modified or relocated facilities to ensure that these facilities do not interfere with progress in attainment of the national ambient air quality standards and that future economic growth in the SCAQMD is not unnecessarily restricted. However, this regulation does not apply to NOx or Sox emissions from certain sources, which are addressed by Regulation XX (RECLAIM).
Regulation XVII: Prevention of Significant Deterioration	This regulation sets forth the pre-construction requirements for stationary sources to ensure that the air quality in clean air areas does not significantly deteriorate while maintaining a margin for future industrial growth.
Regulation XX: Regional Clean Air Incentives Market (RECLAIM)	RECLAIM is designed to allow facilities flexibility in achieving emission reduction requirements for NOx and SOx through controls, equipment modifications, reformulated products, operational changes, shutdowns, other reasonable mitigation measures or the purchase of excess emission reductions.
Regulation XXX: Title V Permits	The Title V federal program is the air pollution control permit system required by the deferral Clean Air Act as amended in 1990. Regulation XXX defines the permit application and issuance as well as compliance requirements associated with the program. Any new or modified major source which qualifies as a Title V facility must obtain a Title V permit prior to construction, operation or modification of that source. Regulation XXX also integrates the Title V permit with the RECLAIM program such that a project cannot proceed without the other.
Regulation XXXI Acid Rain Permits	Title IV of the federal Clean Air Act provides for the issuance of acid rain permits for qualifying facilities. Regulation XXXI integrates the Title V program with the RECLAIM program. Regulation XXXI requires a subject facility to obtain emission allowances for SOX emissions as well as monitoring SOx, NOx, and carbon dioxide (CO_2) emissions from the facility.

SETTING

METEOROLOGICAL CONDITIONS

The climate of coastal Southern California, including the City of Riverside, is controlled by a semi-permanent subtropical high-pressure system that is located off the Pacific

Ocean. In the summer, this strong high-pressure system results in clear skies, high temperatures, and low humidity. Very little precipitation occurs during the summer months because storms are blocked by the high-pressure system. Beginning in the fall and continuing through the winter, the high pressure weakens and moves south, allowing storm systems to move through the area. Temperature, winds, and rainfall are more variable during these months, and stagnant conditions occur more frequently than during summer months. Weather patterns include periods of stormy weather with rain and gusty winds, clear weather that can occur after a storm, or persistent fog. The City of Riverside receives an average of just less than 11 inches of rain annually (WC 2008).

Temperature, wind speed, and wind direction data collected at the Riverside Airport, located approximately one mile south southeast of the RERC 3&4 site, were provided for reference by the applicant (RERC 2008a). An analysis of the data indicates that the most predominant annual wind direction from this monitoring site is from the west northwest. The west northwest wind direction is particularly predominating during the spring and summer, somewhat less predominate in autumn, and wind directions are fairly mixed in the winter without a strongly predominate direction. The wind speeds are generally higher during daylight hours, and do not vary much with the season, but average the highest in the spring and the lowest in the winter. The wind speeds were shown to be calm during a relatively high percentage of hours (33 percent of the time).

Along with the wind flow, atmospheric stability and mixing heights are important factors in the determination of pollutant dispersion. Atmospheric stability reflects the amount of atmospheric turbulence and mixing. In general, the less stable an atmosphere, the greater the turbulence, which results in more mixing and better dispersion. The mixing height, measured from the ground upward, is the height of the atmospheric layer in which convection and mechanical turbulence promote mixing. Good ventilation results from a high mixing height and at least moderate wind speeds with the mixing layer. In general, mixing is more limited at night and in the winter in Riverside when there is a higher potential for lower level inversion layers being present along with low surface winds.

EXISTING AIR QUALITY

The project is located within the jurisdiction of the South Coast Air Quality Management District (District). The applicable federal and California ambient air quality standards (AAQS) are presented in **AIR QUALITY Table 2**. As indicated in this table, the averaging times for the various air quality standards (the duration over which they are measured) range from 1 hour to annual average. The standards are read as a mass fraction, in parts per million (ppm), or as a concentration, in milligrams or micrograms of pollutant per cubic meter of air (mg/m^3 or $\mu g/m^3$).

AIR QUALITY Table 2
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	8 Hour	0.075 ppm (142 μg/m^3)	0.070 ppm (137 μg/m^3)
	1 Hour	—	0.09 ppm (180 μg/m^3)
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9.0 ppm (10 mg/m^3)
	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.053 ppm (100 μg/m^3)	0.03 ppm (56 μg/m^3)
	1 Hour	—	0.18 ppm (338 μg/m^3) [a]
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	0.030 ppm (80 μg/m^3)	—
	24 Hour	0.14 ppm (365 μg/m^3)	0.04 ppm (105 μg/m^3)
	3 Hour	0.5 ppm (1300 μg/m^3)	—
	1 Hour	—	0.25 ppm (655 μg/m^3)
Respirable Particulate Matter (PM10)	Annual Arithmetic Mean	—	20 μg/m^3
	24 Hour	150 μg/m^3	50 μg/m^3
Fine Particulate Matter (PM2.5)	Annual Arithmetic Mean	15 μg/m^3	12 μg/m^3
	24 Hour	35 μg/m^3	—
Sulfates (SO_4)	24 Hour	—	25 μg/m^3
Lead	30 Day Average	—	1.5 μg/m^3
	Calendar Quarter	1.5 μg/m^3	—
Hydrogen Sulfide (H_2S)	1 Hour	—	0.03 ppm (42 μg/m^3)
Vinyl Chloride (chloroethene)	24 Hour	—	0.01 ppm (26 μg/m^3)
Visibility Reducing Particulates	8 Hour	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

Source: ARB 2008a.

The U.S. Environmental Protection Agency (U.S. EPA), California Air Resource Board (ARB), and the local air district classify an area as attainment, unclassified, or nonattainment, depending on whether or not the monitored ambient air quality data show compliance, insufficient data is available, or non-compliance with the ambient air quality standards, respectively. The RERC 3&4 is located within the South Coast Air Basin (SoCAB) and, as stated above, is under the jurisdiction of the South Coast Air Quality Management District. This area is designated as nonattainment for both the federal and state ozone, PM10, and PM2.5 standards. **AIR QUALITY Table 3** summarizes the current federal and state attainment status of criteria pollutants for the SoCAB.

AIR QUALITY Table 3
Federal and State Attainment Status for the South Coast Air Basin

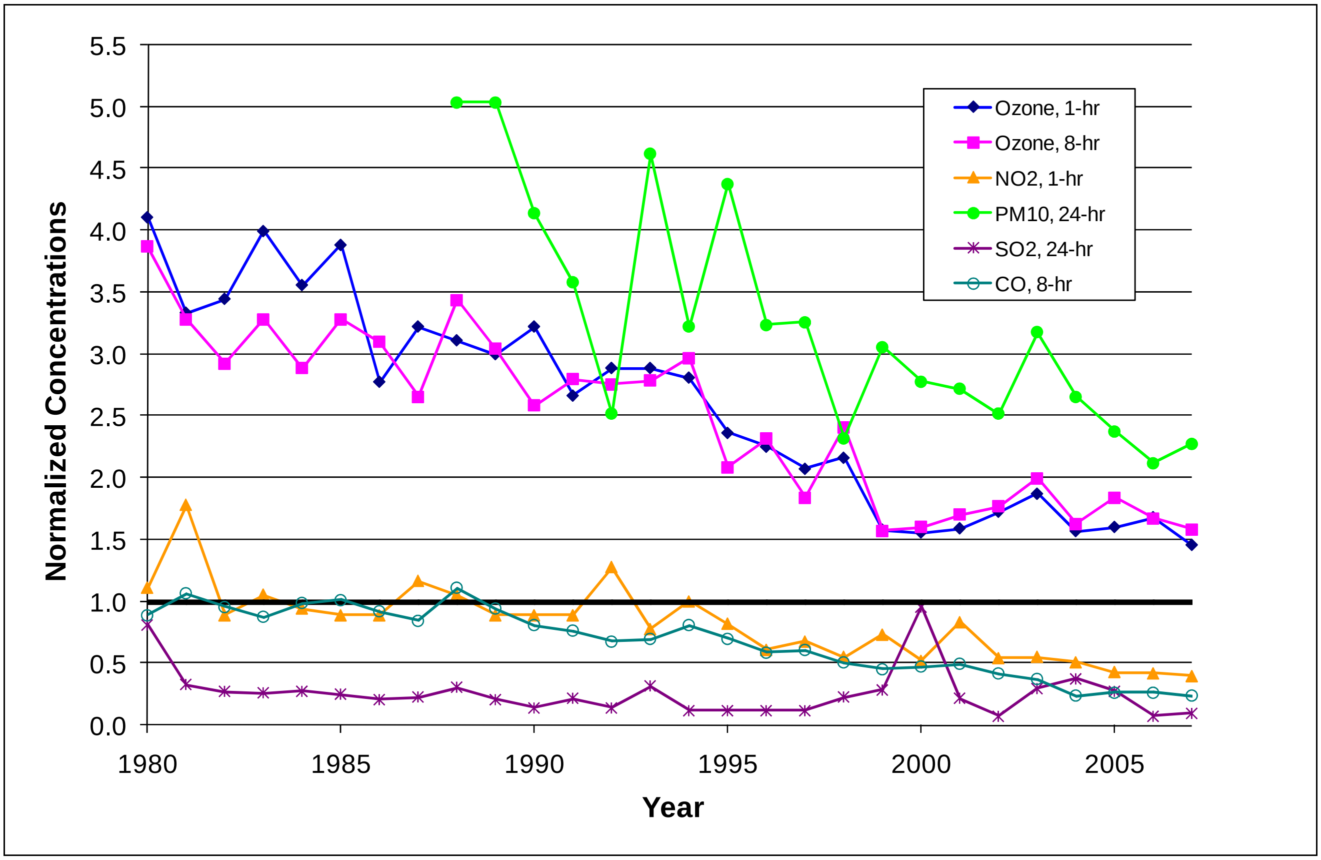
Pollutant	Attainment Status	
	Federal	**State**
Ozone	Severe Nonattainment (8-hr)	Extreme Nonattainment (1-hr)
CO	Attainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
PM10	Serious Nonattainment	Nonattainment
PM2.5	Nonattainment	Nonattainment

Source: ARB 2008b, U.S. EPA 2008.

The project site is located in northwest Riverside County, within an industrial/ light industrial/manufacturing area in the City of Riverside, adjacent to the City of Riverside's Wastewater Treatment Plant. The monitoring station closest to the proposed project site is the Magnolia Street Station in Riverside, located approximately 3.5 miles southeast of the project site. This station monitors ambient concentrations of CO and PM2.5. The Riverside – Rubidoux Station which is located approximately four miles northeast of the project site on Mission Boulevard near the intersection of 42nd Street, monitors ambient concentrations of ozone, CO, NO_2, SO_2, PM10, and PM2.5.

AIR QUALITY Figure 1 summarizes the historical air quality data for the project location, recorded at the Magnolia Street (CO and PM2.5 only) and Rubidoux air monitoring stations. In **AIR QUALITY Figure 1**, the short term normalized concentrations are provided from 1980 to 2006. Normalized concentrations represent the ratio of the highest measured concentrations in a given year to the most-stringent applicable national or state ambient air quality standard. Therefore, normalized concentrations lower than *1* indicates that the measured concentrations were lower than the most-stringent ambient air quality standard for that pollutant.

AIR QUALITY Figure 1
Normalized Maximum Short-Term Historical Air Pollutant Concentrations



Source: ARB 2006a, ARB 2008c, SCAQMD 2008.
A Normalized Concentration is the ratio of the highest measured concentration to the applicable most stringent air quality standard. For example, in 2003 the highest eight-hour average ozone concentration measured at the Riverside – Rubidoux station was 0.140 ppm. Since the most stringent ambient air quality standard is the state standard of 0.07 ppm, the 2003 normalized concentration is 0.140/0.07 = 2.0.

Following is a more in-depth discussion of ambient air quality conditions in the project area.

Ozone

In the presence of ultraviolet radiation, both nitrogen oxides (NOx) and volatile organic compounds (VOC) go through a number of complex chemical reactions to form ozone. **AIR QUALITY Table 4** summarizes the ambient ozone data collected from the Riverside-Rubidoux monitoring station for the past ten available years (1998 through 2007). The table includes the maximum one-hour and eight-hour ozone levels and the number of days above the state standards. Ozone formation is higher in spring and summer and lower in the winter. The SoCAB was classified as an extreme nonattainment area for the previous federal 1-hour ozone standard (no longer applicable) and is classified as a severe nonattainment area for the federal 8-hour ozone standard. The SCAQMD has requested that this 8-hour nonattainment classification, which was based on the former standard of 0.08 ppm, be revised to extreme in order to provide more time to reach the standard (SCAQMD 2007). The recent reduction in the federal 8-hour standard to 0.075 ppm could change the federal ozone nonattainment classification; however, it will be several years until that new standard is fully implemented. The SoCAB is also classified as an extreme nonattainment area for the state 1-hour ozone standard.

AIR QUALITY Table 4
Ozone Air Quality Summary, 1998-2007 (ppm)

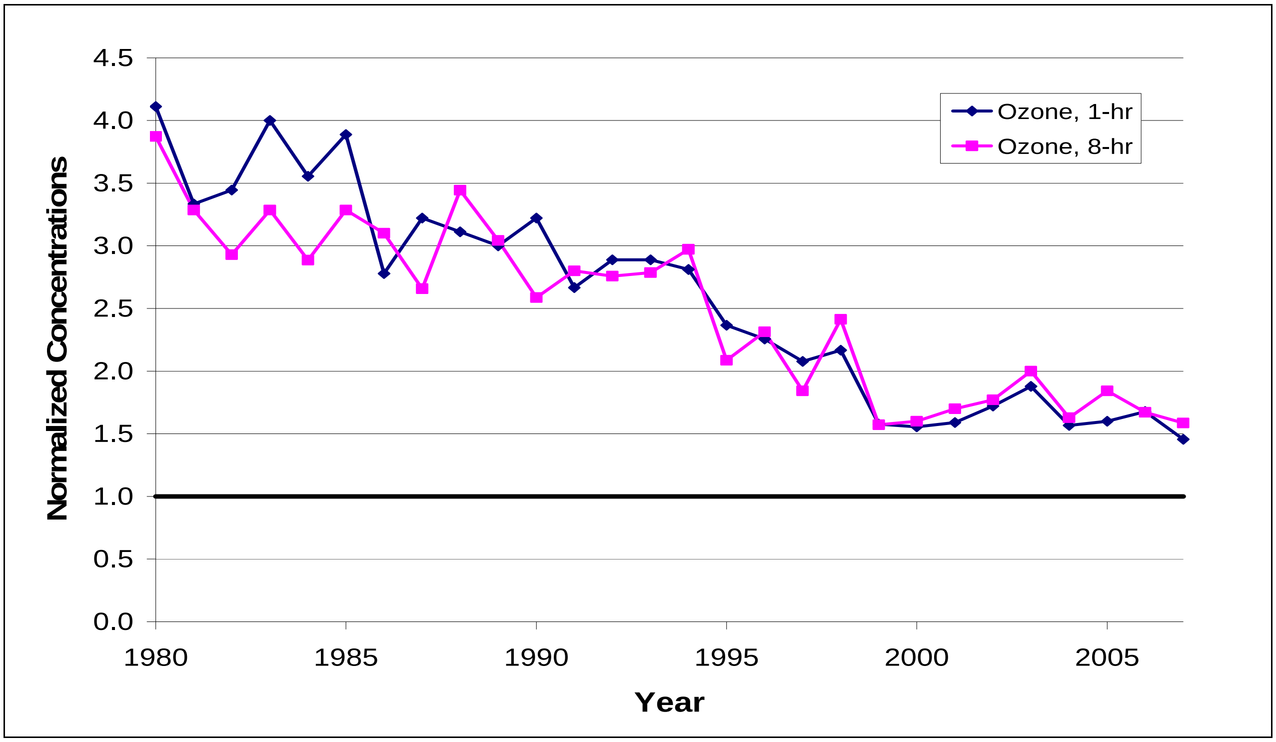
Year	Days Above CAAQS 1-Hr	Month of Max. 1-Hr Avg.	Max. 1-Hr Avg.	Days Above CAAQS 8-Hr	Month of Max. 8-Hr Avg.	Max. 8-Hr Avg.
Riverside-Rubidoux						
1998	70	AUG	0.195	86	JUL	0.169
1999	38	JUL	0.142	66	AUG	0.110
2000	42	MAY	0.140	71	MAY	0.112
2001	41	AUG	0.143	64	JUN	0.119
2002	56	SEP	0.155	94	AUG	0.124
2003	80	SEP	0.169	98	AUG	0.140
2004	59	JUL	0.141	87	JUL	0.114
2005	46	MAY	0.144	83	MAY	0.129
2006	45	JUN	0.151	75	JUL	0.117
2007	31	SEP	0.131	69	JUL	0.111
California Ambient Air Quality Standard (CAAQS): 1-Hr, 0.09 ppm, 8-Hr, 0.070 ppm National Ambient Air Quality Standard (NAAQS): 8-Hr, 0.075 ppm						

Source: ARB 2006a, ARB 2008c, SCAQMD 2008a.

The yearly trends from 1980 to 2007 for the maximum one-hour and eight-hour ozone concentrations, referenced to the most stringent standard, and the number of days exceeding the California one-hour and eight-hour standards for the Riverside-Rubidoux monitoring station are shown in **AIR QUALITY Figure 2** and **Figure 3**, respectively.

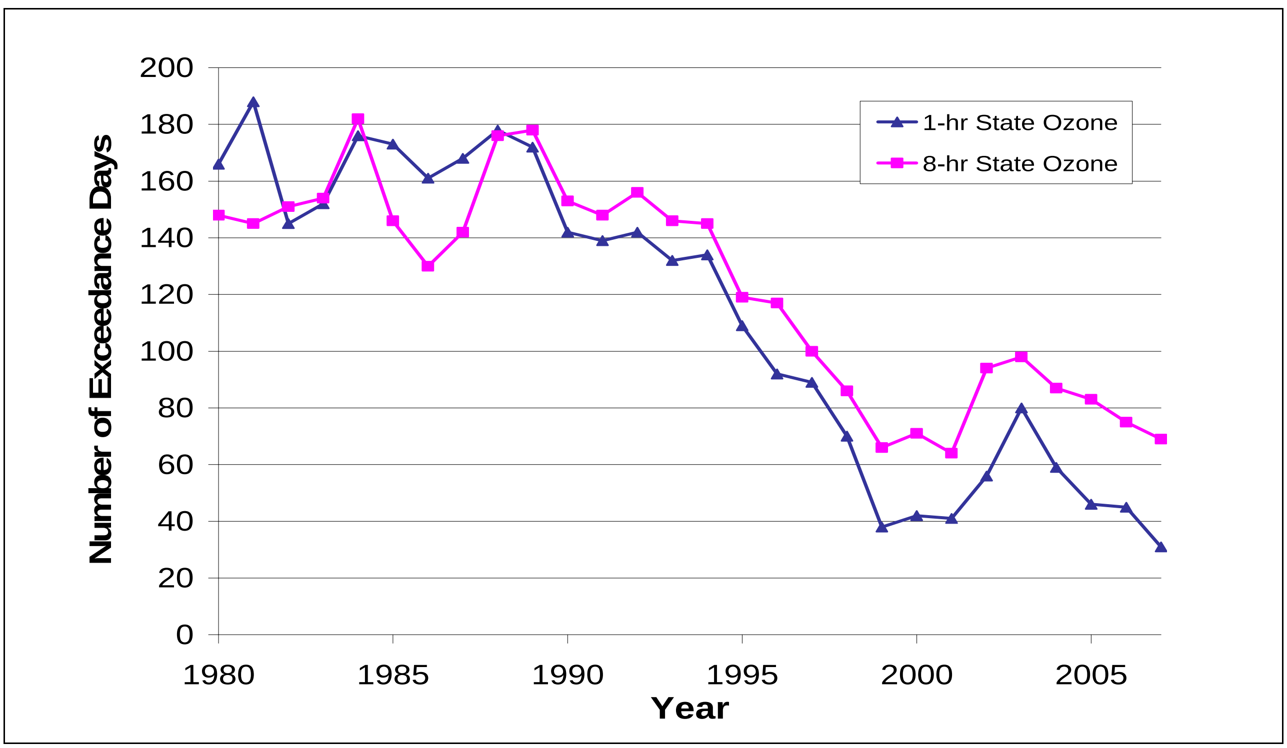
As these two figures show, the one-hour and eight-hour ozone concentrations were highest in 1980 and the number of days with exceedances was highest in 1981 and 1984 for the one-hour and eight-hour standards, respectively. There has been a substantial decrease in the peak concentrations and number of days with exceedances since the early 1980's; however, there has been little or no improvement in the peak concentrations and number of exceedances since 1999.

AIR QUALITY Figure 2
Normalized Ozone Air Quality Maximum Concentrations



Source: ARB 2006a, ARB 2008c.

AIR QUALITY Figure 3
Ozone – Number of Days Exceeding the Air Quality Standards



Source: ARB 2006a, ARB 2008c.

Respirable Particulate Matter (PM10)

The SoCAB is classified as a serious nonattainment area for the federal PM10 standard and as a nonattainment area for the state PM10 standards.

PM10 can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere. Gaseous emissions of pollutants like NOx, SOx and VOC from turbines, and ammonia from NOx control equipment, given the right meteorological conditions, can form particulate matter in the form of nitrates (NO_3), sulfates (SO_4), and organic particles. These pollutants are known as secondary particulates, because they are not directly emitted, but are formed through complex chemical reactions in the atmosphere.

PM nitrate (mainly ammonium nitrate) is formed in the atmosphere from the reaction of nitric acid and ammonia. Nitric acid in turn originates from NOx emissions from combustion sources. The nitrate ion concentrations during the wintertime are a significant portion of the total PM10, and are likely even a higher contributor to particulate matter of less than 2.5 microns (PM2.5). The nitrate ion is only a portion of the PM nitrate, which can be in the form of ammonium nitrate (ammonium plus nitrate ions) and some as sodium nitrate. If the ammonium and the sodium ions associated with the nitrate ion are taken into consideration, PM nitrate contributions to the total PM are even more significant.

AIR QUALITY Table 5 summarizes the ambient PM10 data collected from the Riverside-Rubidoux monitoring station for the past ten available years (1998 through 2007).

AIR QUALITY Table 5
PM10 Air Quality Summary, 1998-2007 ($\mu g/m^3$)

Year	Days * Above Daily CAAQS	Month of Max. Daily Avg.	Max. Daily Avg.	Annual Arithmetic Mean
Riverside-Rubidoux				
1998	--	OCT	116	--
1999	261	NOV	153	72.2
2000	248	DEC	139	60.1
2001	240	OCT	136	62.9
2002	228	NOV	126	56.2
2003	201	OCT	159	55.1
2004	210	MAR	133	53.5
2005	198	OCT	119	50.4
2006	214	SEP	106	52.7
2007	204	MAR	114	57.1

California Ambient Air Quality Standard: 24-Hr, 50 $\mu g/m^3$; Annual Arithmetic, 20 $\mu g/m^3$
National Ambient Air Quality Standard: 24-Hr, 150 $\mu g/m^3$

* Days above the state standard (calculated): PM10 is monitored approximately once every six days. This value is a mathematical estimate of how many days the PM10 concentrations would have been greater than the level of the standard had each day been monitored.

Wild fire event days have been excluded from the table.

"--" Data not available

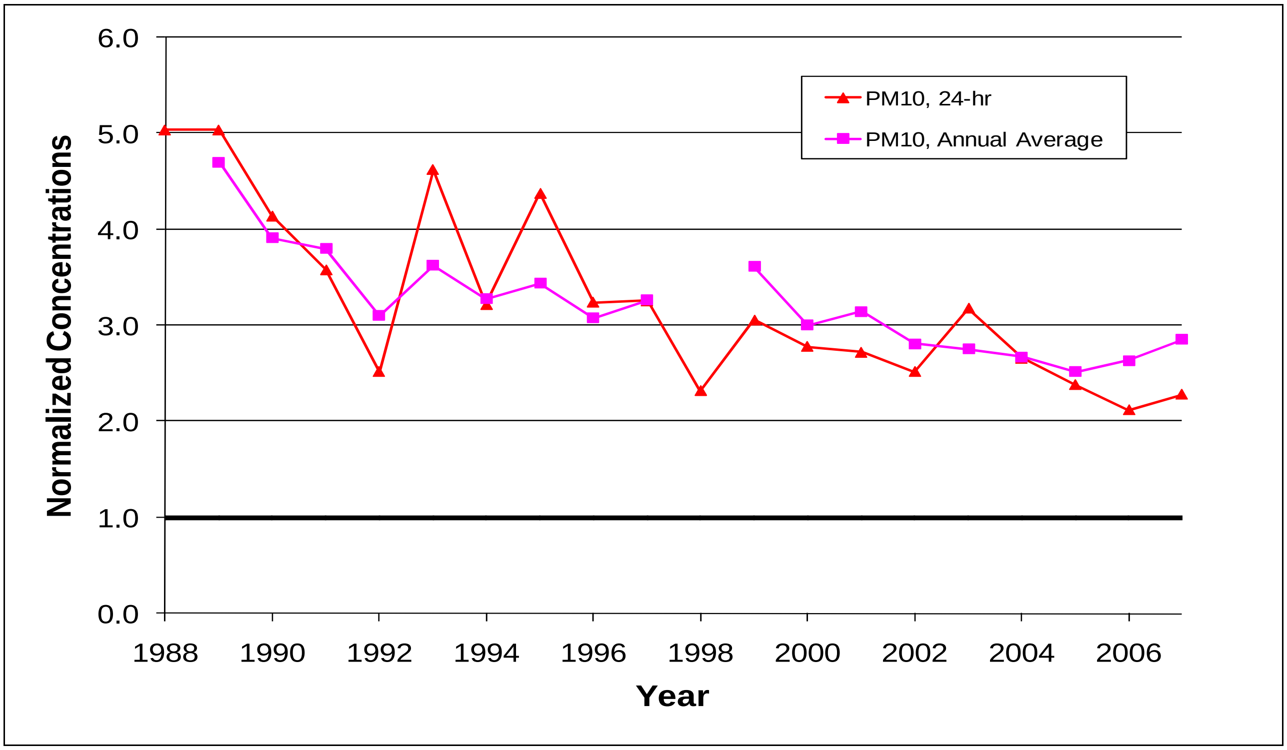
Source: ARB 2006a, ARB 2008c.

As **AIR QUALITY Table 5** indicates, the project area annually experiences a number of violations of the state and federal 24-hour PM10 standards. The highest PM10 concentrations are generally measured in the fall and winter when there are frequent low-level inversions. During the wintertime high PM10 episodes, the contribution of ground level releases to ambient PM10 concentrations is disproportionately high.

The 1988/1989 to 2006/2007 yearly trends for the maximum 24-hour PM10 and Annual Arithmetic Mean PM10, referenced to the most stringent standard, and the number of days exceeding the California 24-hour PM10 standard for the Riverside-Rubidoux monitoring station are shown in **AIR QUALITY Figure 4** and **Figure 5**, respectively.

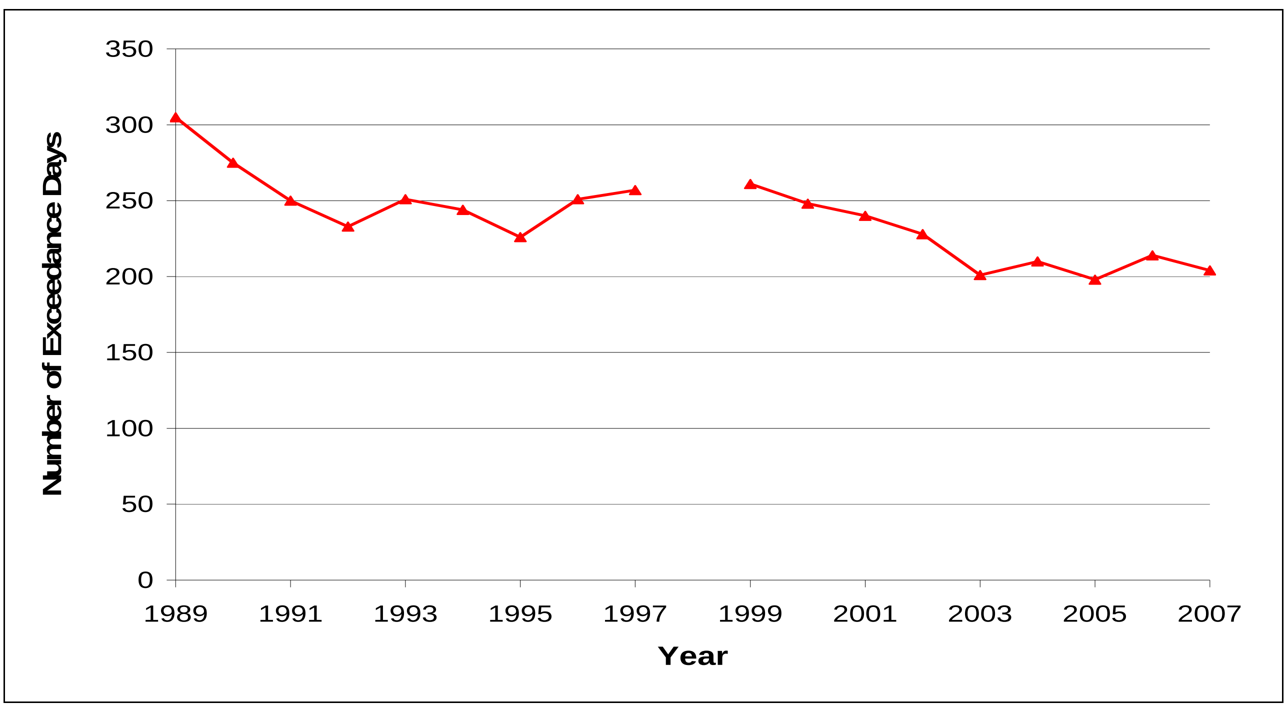
As the two figures show, there is an overall gradual downward trend for PM10 concentrations and number of violations of the California 24-hour standard since 1988.

AIR QUALITY Figure 4
Normalized PM10 Air Quality Maximum Concentrations



Source: ARB 2006a, ARB 2008c.

AIR QUALITY Figure 5
PM10 24-Hour – Number of Days Exceeding the Air Quality Standard



Source: ARB 2006a, ARB 2008c.

Fine Particulate Matter (PM2.5)

The SoCAB is classified as nonattainment for the federal and state fine particulate matter (PM2.5) standards. As shown in **AIR QUALITY Table 6**, the highest PM2.5 concentrations are generally measured in the winter. The relative contribution of wood-smoke particles to the PM2.5 concentrations may be even higher than its relative contribution to PM10 concentrations, considering that most of the wood-smoke particles are smaller than 2.5 microns.

As **AIR QUALITY Table 6** indicates, the 24-hour (1-year average 98th percentile) PM2.5 concentration levels have been declining from 1999-2007, but were still above the NAAQS of 35 $\mu g/m^3$ in 2006 at the Riverside Magnolia Street monitoring station. The annual arithmetic mean concentration also has been declining from 1999-2007, but continues to be above the NAAQS of 15 $\mu g/m^3$ and the CAAQS of 12 $\mu g/m^3$.

AIR QUALITY Table 6
PM2.5 Air Quality Summary, 1999-2007 ($\mu g/m^3$)

Year	National Maximum Daily	Month of Max. Daily Avg.	98th Percentile Maximum Daily	State Annual Average	National Annual Average
Riverside-Magnolia Street					
1999	89.9	JAN	61.6	--	26.7
2000	79.3	OCT	66.8	--	25.3
2001	74.9	NOV	65.8	--	28.2
2002	75.5	APR	63.7	--	27.1
2003	73.3	OCT	56.2	22.6	22.6
2004	93.8	MAR	53.7	--	20.8
2005	94.9	OCT	--	**--**	17.9
2006	55.3	FEB	47.7	**--**	16.9
2007	68.5	NOV	--	**--**	18.3
	California Ambient Air Quality Standard: Annual Arithmetic Mean, 12 $\mu g/m^3$ National Ambient Air Quality Standard: 24-Hr Avg. Conc., 35 $\mu g/m^3$ (based on 98 percent of the daily concentrations, average over three years); Annual Arithmetic Mean, 15 $\mu g/m^3$ Maximum average values corresponding to the most restrictive standard occurring during the most recent three years of available data are indicated in bold.				

Source: ARB 2006a, ARB 2008c.

The maximum daily PM2.5 concentrations shown in **AIR QUALITY Table 6** typically occurred in the late fall or winter (fourth and first quarters).

Carbon Monoxide (CO)

The highest concentrations of CO occur when low wind speeds and a stable atmosphere trap the pollution emitted at or near ground level in what is known as the stable boundary layer. These conditions occur frequently in the wintertime, late in the afternoon, persist during the night and may extend one or two hours after sunrise. Since mobile sources (motor vehicles) are the main cause of CO, ambient concentrations of

CO are highly dependent on motor vehicle activity. In fact, the peak CO concentrations occur during the rush hour traffic in the mornings and afternoons. CO concentrations in the SoCAB and the rest of the state have declined significantly due to two state-wide programs: 1) the 1992 wintertime oxygenated gasoline program, and 2) Phases I and II of the reformulated gasoline program. New vehicles with oxygen sensors and fuel injection systems have also contributed to the decline in CO levels in the state. Today, all the areas of California are in attainment with the CO ambient air quality standards.

As **AIR QUALITY Table 7** shows, the maximum one-hour and eight-hour CO concentrations in the project area are well less than the California Ambient Air Quality Standards. CO is considered a local pollutant, as it is found in high concentrations only near the source of emission. Automobiles and other mobile sources are the principal sources of the CO emissions. High levels of CO emissions can also be generated from fireplaces and wood-burning stoves. According to the data recorded at the Riverside-Magnolia Street and Riverside-Rubidoux air monitoring stations, there have been no violations of the Ambient Air Quality Standards monitored in the City of Riverside since prior to 1980 for the state one-hour CO standard and 1989 for the state and federal eight-hour CO standards (see **AIR QUALITY Figure 1 and Table 7**).

AIR QUALITY Table 7
CO Air Quality Summary, 1998-2007 (ppm)

Year	Month of Max. 8-Hr Average	Maximum 1-Hr Average	Maximum 8-Hr Average
Riverside–Magnolia Street			
1998	JAN	6.4	4.57
1999	JAN	7.4	4.10
2000	JAN	8.8	4.23
2001	JAN	5.8	4.48
2002	JAN	6.5	3.75
2003	OCT	4.6	3.33
2004	JAN	3.9	2.15
2005	DEC	4.0	2.39
2006	DEC	4	2.38
2007	JAN	4	2.16
California Ambient Air Quality Standard: 1-Hr, 20 ppm; 8-Hr, 9.0 ppm National Ambient Air Quality Standard: 1-Hr, 35 ppm; 8-Hr, 9 ppm			

Source: ARB 2006a, ARB 2008c, SCAQMD 2008a.

Nitrogen Dioxide (NO_2)

As shown in **AIR QUALITY Table 8,** the maximum one-hour and annual concentrations of NO_2 at the Riverside-Rubidoux monitoring station are lower than the California and National Ambient Air Quality Standards. Approximately 75 to 90 percent of the NOx emitted from combustion sources is NO, while the balance is NO_2. NO is oxidized in the atmosphere to NO_2, but some level of photochemical activity is needed for this conversion. This is why the highest concentrations of NO_2 generally occur during the fall and not in the winter, when atmospheric conditions favor the trapping of ground level releases, but lack significant photochemical activity (less sunlight). In the summer, the conversion rates of NO to NO_2 are high, but the relatively high temperatures and windy conditions (atmospheric unstable conditions) generally disperse pollutants, preventing the accumulation of NO_2 to levels approaching the California one-hour ambient air quality standard. The formation of NO_2 in the summer, in the presence of ozone, is according to the following reaction:

$$NO + O_3 \rightarrow NO_2 + O_2$$

In urban areas, ozone concentration levels are typically high. These levels drop substantially at night as the above reaction takes place between ozone and NO. This reaction explains why, in urban areas, ozone concentrations at ground level drop, while aloft and in downwind rural areas (without sources of fresh NOx emissions) ozone concentrations can remain relatively high.

AIR QUALITY Table 8
NO_2 Air Quality Summary, 1998-2007 (ppm)

Year	Month of Max. 1-Hr Average	Maximum 1-Hr Average	Maximum Annual Average
Riverside-Rubidoux			
1998	DEC	0.099	0.022
1999	NOV	0.132	0.025
2000	DEC	0.094	0.022
2001	MAR	0.150	0.024
2002	NOV	0.098	0.023
2003	OCT	0.099	0.021
2004	FEB	0.092	0.017
2005	NOV	0.077	0.022
2006	FEB	0.076	0.020
2007	OCT	0.072	0.020
California 1-Hr Ambient Air Quality Standard: 0.18 ppm National Annual Arithmetic Mean Ambient Air Quality Standard: 0.030 ppm Maximum average values corresponding to the most restrictive standard occurring during the most recent three years of available data are indicated in bold.			

Source: ARB 2006a, ARB 2008c.

Sulfur Dioxide (SO_2)

Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. Fuels, such as natural gas, contain very little sulfur and consequently have very low SO_2 emissions when combusted. By contrast, fuels high in sulfur content, such as coal, emit very large amounts of SO_2 when combusted.

Sources of SO_2 emissions within the SoCAB come from every economic sector and include a wide variety of fuels: gaseous, liquid and solid. The SoCAB is designated attainment for all the SO_2 state and federal ambient air quality standards. **AIR QUALITY Table 9** shows the historic one-hour, 24-hour and annual average SO_2 concentrations collected from the Riverside-Rubidoux monitoring stations. As **AIR QUALITY Table 9** shows, concentrations of SO_2 are far below the state and federal SO_2 ambient air quality standards.

AIR QUALITY Table 9
SO_2 Air Quality Summary, 1998-2007 (ppm)

Year	Maximum 1-Hr Avg.	Month of Max. 24-Hr Avg.	Maximum 24-Hr Avg.	Annual Average
Riverside – Rubidoux				
1998	0.031	NOV	0.009	0.001
1999	0.034	FEB	0.012	0.002
2000	0.107	MAR	0.038	0.001
2001	0.019	AUG	0.009	0.001
2002	0.016	FEB	0.003	0.000
2003	0.018	JUL	0.012	0.002
2004	0.017	JUN	0.015	0.003
2005	0.024	SEP	0.011	0.003
2006	0.01	NOV	0.003	0.001
2007	0.02	MAR	0.004	0.002

California Ambient Air Quality Standard: 1-Hr, 0.25 ppm; 24-Hr, 0.04 ppm
National Ambient Air Quality Standard: 3-Hr, 0.5 ppm; 24-Hr, 0.14 ppm; Annual, 0.030 ppm

Maximum average values corresponding to the most restrictive standard occurring during the most recent available data are indicated in bold.

Source: ARB 2006a, SCAQMD 2008a.

Visibility

Visibility in the region of the project site depends upon the area's natural relative humidity and the intensity of both particulate and gaseous pollution in the atmosphere. The most straightforward characterization of visibility is probably the visual range (the greatest distance that a large dark object can be seen). However, in order to characterize visibility over a range of distances, it is more common to analyze the changes in visibility in terms of the change in light-extinction that occurs over each additional kilometer of distance (1/km). In the case of a greater light-extinction, the visual range will decrease.

The SoCAB is currently designated as unclassified for visibility reducing particles.

Summary

In summary, staff recommends the background ambient air concentrations in **AIR QUALITY Table 10** for use in the modeling and impacts analysis. The maximum criteria pollutant concentrations from the past three years of available data collected at the monitoring stations within the city of Riverside are used to determine the recommended background values.

AIR QUALITY Table 10
Staff Recommended Background Concentrations ($\mu g/m^3$)

Pollutant	Averaging Time	Recommended Background ($\mu g/m^3$)	Limiting Standard	Percent of Standard
NO_2	1 hour	145	338	43%
	Annual	41	56	73%
PM10	24 hour	119	50	238%
	Annual	57.1	20	286%
PM2.5	24 hour	47.7	35	136%
	Annual	18.3	12	152%
CO	1 hour	4,600	23,000	20%
	8 hour	2,656	10,000	27%
SO_2	1 hour	63	655	10%
	3 hour [a]	57	1,300	4%
	24 hour	28	105	27%
	Annual	8	80	10%

Source: ARB 2006a, ARB 2008c, SCAQMD 2008a & Energy Commission Staff Analysis
[a] The 3 hour background SO_2 concentration is assumed to be 90% of the 1 hour background.

The background concentrations for PM10 and PM2.5 are well above the most restrictive existing ambient air quality standards, while the background concentrations for the other pollutants listed are all well below the most restrictive existing ambient air quality standards.

The pollutant modeling analysis was limited to the pollutants listed above in **AIR QUALITY Table 10**; therefore, recommended background concentrations were not determined for the other criteria pollutants (ozone, lead, visibility, etc.)

PROJECT DESCRIPTION AND EMISSIONS

The city of Riverside, Riverside Public Utilities (RPU) proposes to build, own, and operate two simple cycle units at its Riverside Energy Resource Center (RERC) within the City of Riverside, California. RERC currently consists of two aero-derivative combustion turbine generators LM6000 PC SPRINT NxGen with Selective Catalytic Reduction Systems (SCRs), using onsite natural gas and water supply interconnections and existing administrative/maintenance buildings. This project would add two new units (3&4), with a nominal generation capacity of approximately 95 megawatts (MW). These two additional units would be essentially identical to the existing RERC 1&2 units. RERC 3&4 would be located to the north and adjacent to RERC 1&2. They would occupy approximately 2.2 acres of the 16 acres RERC site. RERC 3&4 would maximize the use of existing facilities, and the project would have no linear additions.

CONSTRUCTION

Construction of RERC 3&4 is anticipated to last approximately nine months. Commencement of construction is anticipated in the fourth quarter of 2008, with commercial operation of the first of the two new units anticipated in the summer of 2009.

Emissions of fugitive particulate matter (PM10 and PM2.5) during the construction of the project can result from earthmoving operations. Potential fugitive particulate emissions would be minimized by periodically applying water to disturbed areas and stockpiles. Water would also be applied to critical operations such as scraping, loading, and unloading of soil. Because the site is already partially developed, all roads to the construction site are paved. Paved roads leading to the site would be swept periodically to remove deposited soils. To further reduce paved road dust emissions, truck tires that may be laden with soil would be washed before exiting the project, and truck beds carrying soil would be covered to prevent soil from being transported to roadways and dispersed to the atmosphere from other vehicles.

Combustion emissions during the construction of the project result from exhaust sources, including diesel construction equipment used for site preparation, water trucks used to control dust emissions, diesel-powered welding machines, electric generators, air compressors, water pumps, diesel trucks used for deliveries, and automobiles and trucks used by workers to commute to and from the construction site.

The applicant estimates that the maximum emissions during construction would occur in the third month of construction (January 2009), during which excavation, foundation, equipment/material delivery would occur. The maximum daily construction emission estimate is provided in **AIR QUALITY Table 11**.

AIR QUALITY Table 11
Maximum Daily Emissions During Construction
January 2009, lbs/day

Location	**NO_x**	**CO**	**VOC**	**SO_x**	**PM10**	**PM2.5**
On-site	117.20	116.65	13.23	0.11	24.45	10.17
Off-site	9.93	19.49	2.28	0.02	47.89	7.88
Total Maximum Daily Emissions	127.13	136.14	15.51	0.14	72.35	18.05

Source: RERC 2008a.

Total on-site and off-site construction emissions during the 9-month construction period are summarized in AIR QUALITY Table 12.

AIR QUALITY Table 12
Project Total Emissions During Construction
November 2008 - October 2009, lbs/project

Location	**NO_x**	**CO**	**VOC**	**SO_x**	**PM10**	**PM2.5**
On-site	9,652	15,597	1,145	10	3,089	1,096
Off-site	671	3,386	358	4	2,530	430
Total Emissions	10,323	18,983	1,503	14	5,619	1,525

Source: RERC 2008a.

EQUIPMENT DESCRIPTION

The major equipment proposed in the application includes the following (RERC 2008a):

- Two General Electric LM6000 PC SPRINT NxGen combustion turbine generators (CTGs) with SPRINT Power Boost Systems, each rated at approximately 48 MW.
- One Caterpillar C32 DITA Diesel engine rated at 1,502HP. This would serve as a black-start engine.[1]
- Two Emissions Control Module systems (ECM) for control of NO_x and CO including tempering air fans and dilution air blowers.
- Continuous emission monitoring (CEM) and data acquisition systems.
- One common chiller package, which include a 3,200-ton electric chiller, dual-chilled water pumps, dual condenser water pumps, 3-cell pre-fabricated, pre-engineered cooling tower, motor control center, and chiller controls.

The following major existing on-site RERC facility equipment are proposed to be utilized for RERC 3&4 without significant additions or upgrades:

- Potable water and tertiary water interconnections.
- Zero Liquid Discharge (ZLD) system.
- Administration/Control Building.
- Ammonia storage tank, loading pad, and catchments basin.

Two new bays would be added to the existing electrical switchyard, and the control room facilities would also be expanded to accommodate RERC 3&4. Two demineralized water storage tanks would be added to the existing make-up water system, as well as a new Dispatch and Scheduling Building for RPU, and a water laboratory would be added to the site. While the REC 3&4 gas turbines are substantially identical to RERC 1&2 gas turbines, there are the two following notable differences:

- The use of fin-fan coolers for lube oil cooling instead of relying on the cooling tower.
- Additional catalyst would be installed in the SCRs to address General Electric's concerns over potential sodium poisoning[2] and to achieve 2.3 ppmvd NO_x in emissions.

INITIAL COMMISSIONING

The initial commissioning of a power plant refers to the time frame between the completion of the construction and the reliable production of electricity for sale on the market. For most power plants operating emission limits usually do not apply during the initial commissioning procedures.

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[1] This engine is being permitted separately by the applicant and they do not consider it part of the SPPE Application, but have provided information on its emissions and impacts. For purposes of completeness the black-start engine is included in the Draft Initial Study evaluation of the project.

[2] Sodium poisoning has not been encountered on the existing RERC 1&2 gas turbine SCR catalysts.

Commissioning activities for the RERC CTGs are expected to last a total of 200 hours per turbine (RERC 2008a). During turbine commissioning operations, it is expected that the RERC 3&4 gas turbines would operate at low loads, without the use of catalysts to reduce post-CTG NOx and CO emissions, but with water injection for CTG NO_x emission control. For emission calculations, fuel throughput is assumed to be 100 percent of rated capacity. NO_x and CO concentrations are assumed to be 25 ppmv and 42 ppmv, respectively. **AIR QUALITY Table 13** contains a summary of estimated maximum hourly and daily emissions for one combustion turbine during commissioning operations and total two turbine commissioning emissions.

AIR QUALITY Table 13
Maximum Commissioning Emissions[a]

	NO_x	CO	VOC	SO_x	PM10/PM2.5
Maximum Hourly Per Turbine, lbs/hr	45.16	46.19	1.27	0.28	3.00
Maximum Daily Per Turbine, lbs/day	1,083.87	1,108.58	30.6	6.71	72.00
Total Per Turbine, tons	4.52	4.62	0.13	0.03	0.30
Total Two Turbines, tons	9.03	9.24	0.25	0.06	0.60

Source: RERC 2008a
[a] 24 hours/day, 200 hours total commissioning hours.

OPERATIONAL PHASE

Emission Controls

The exclusive use of pipeline-quality natural gas, a relatively clean-burning fuel, would limit the formation of VOC, PM10, and SO_2 emissions. Natural gas contains very little noncombustible gas or solid residues and a small amount of reduced sulfur compounds including mercaptan. There would be no distillate fuel oil firing at RERC, except that the new black start engine would use ultra-low sulfur diesel.

The CTGs would use water injection technology to minimize NO_x emissions from the CTG exhaust. Each turbine would also be equipped with a Selective Catalytic Reduction (SCR) system to control NO_x concentrations in the exhaust gas to no more than 2.3 ppmvd at 15 percent O_2 (1-hour average concentration excluding startups and shutdowns) from the gas turbine. The SCR process would use 19 percent aqueous ammonia as a reducing agent to catalytically convert the NO_x present in CTG exhaust to molecular nitrogen (N_2) and water vapor. Ammonia slip would be limited to 5 ppmvd at 15 percent O_2.

Carbon monoxide (CO) would be controlled upstream of the SCR systems by an oxidation catalyst, and would be limited to 6 ppmvd at 15 percent O_2 (1-hour average). The CO catalyst would also reduce the VOC emissions to less than 2.0 ppmvd at 15 percent O_2 (1-hour average). This catalyst system promotes the oxidation of CO to carbon dioxide (CO_2) and oxidation of VOC to CO_2 and water without the need for additional reagents.

Two 80-foot-tall, exhaust stacks would release the CTG exhaust gas into the atmosphere. One continuous emission monitoring system would be provided for each of the combustion turbine packages. The proposed Continuous Emission Monitors (CEMs) utilized extractive sampling technology to monitor outlet NO_x, CO, and O_2 concentrations. The system would also be used to predict ammonia slip emissions. Stack flow rates would be calculated based upon measured fuel consumption rates and would be used to determine hourly mass emissions in accordance with South Coast Air Quality District (SCAQMD) and U.S Environmental Protection Act (U.S. EPA) regulations.

A common data acquisition system (DAS) would be located in the control room. The CEMs would generate a log of emissions data for compliance documentation and would activate an alarm in the plant control room if stack emissions exceed specified limits. The DAS would calculate all average emissions rates and would be the source of historic CEMs output data. The CEMs and DAS would be certified for operation and maintained in accordance with SCAQMD and U.S EPA regulations.

Facility Operation

The applicant proposes to limit annual operations to a combined 2,460 hours per year for both turbines. Included in these operating hours are 150 startup, 150 shutdown events and 10 hours of maintenance operations per year for each turbine. This leaves an allowance for 920 hours per year under normal operations for each turbine. During normal operations, the two CTGs are assumed to operate at rated capacity with SCR and CO oxidation in full operation. NO_x and CO emission rates would be controlled to 2.3 ppmv and 6 ppmv, respectively.

Project Operating Emissions

AIR QUALITY Table 14 contains a summary of the estimated maximum hourly emissions per turbine during normal operations at full load, during startup, during shutdown, and during maintenance events.

AIR QUALITY TABLE 14
Maximum Pollutant Emission Rates Per Turbine - Normal Operations

	NO_x	CO	VOC	SO_x	PM10/PM2.5
Normal Operations, lbs/hr	4.17	6.62	1.28	0.28	3.00
Startup, lbs/hr	11.03	11.60	1.17	0.26	2.75
Shutdown, lbs/hr	6.14	10.92	1.28	0.28	3.00
Maintenance, lbs/hr	45.16	46.19	1.28	0.28	3.00

Source: RERC 2008a

Hourly emissions during normal operations reflect full utilization of SCR and CO oxidation systems. Hourly emissions during startup reflect a 10-minute process during which fuel consumption and power output rise to 100 percent of rated capacity, with the remaining 50 minutes of the hour in normal full load operation. Hourly emissions during shutdown reflect that the shutdown process takes approximately eight minutes, with the remaining 52 minutes of the hour in normal full load operation. Hourly maintenance emissions assume that during certain maintenance activities the SCR and oxidation catalyst would not be functioning, but the water injection would be functioning so that the NO_x and CO emissions are equivalent to worst initial commissioning emissions.

AIR QUALITY Table 15 summarizes the maximum worst-case estimated hourly levels of the different criteria pollutants from the RERC 3&4 project and the existing site facilities (RERC 1&2). To following worst case assumptions, based on the entire facility modeling analyses performed by the applicant, were made:

Maximum Hourly Emissions:

For NO_x, CO:

- One turbine is in commissioning/maintenance operation while the other is in full load.
- One-half hour of black-start engine operation.

For VOC, SO_x, PM10/PM2.5:

- Two turbines operate at full load.
- Cooling tower operates at maximum output.
- 140 pounds of ZLD filtercake handling is performed hourly.
- One hour of black-start engine operation.

For RERC 1&2

- Two turbines operate at full load.
- Cooling tower operates at maximum output.
- 140 pounds of ZLD filtercake handling.

AIR QUALITY Table 15
RERC Worst-case Hourly Emissions, lbs/hr

	NO_x	**CO**	**VOC**	**SO_x**	**PM10/PM2.5**
Gas Turbines (2)	49.31	52.77	2.55	0.56	6.00
Cooling Tower	--	--	--	--	0.0325
Black-Start Engine	6.49	1.97	0.18	0.004	0.16
ZLD Filtercake Handling[a]	--	--	--	--	0.0037
RERC 3&4 Hourly Emissions	55.80	56.71	2.73	0.56	6.20
RERC 1&2 Hourly Emissions	9.00	13.17	2.55	0.56	6.41
Total Facility Emissions	64.80	184.24	5.28	1.12	12.61

Source: RERC 2008a, RERC 2008e, CEC 2004

[a]The incremental emission rate resulting from ZLD Filtercake Handling for RERC 3&4 is assumed to be the same as the emission rate for RERC 1&2.

AIR QUALITY Table 16 summarizes the maximum worst-case estimated daily levels of the different criteria pollutants from the RERC 3&4 project and the existing site facilities. To assess worst-case daily emissions for RERC 3&4, the following assumptions were made:

Maximum Daily Emissions:

<u>For VOC, SO_x, PM10/PM2.5:</u>

- Two turbines operate at full load for 24 hours.
- Cooling tower operates at maximum output for 24 hours.
- 1.68 tons of ZLD filtercake handling is performed.

<u>For CO, NO_x:</u>

- Each turbine operates at full load for 16 hours.
- Each turbine undergoes 4 hours of startup and 4 hours of shutdown operations.

<u>For RERC 1&2:</u>

- Same RERC 3&4 assumptions for turbines, cooling tower and filtercake handling.

AIR QUALITY Table 16
RERC Worst-case Daily Emissions, lbs/day

	NO_x	CO	VOC	SO_x	PM10/PM2.5
Gas Turbines (2)	270.66	391.97	61.20	13.44	144
Cooling Tower	--	--	--	--	0.78
Black-Start Engine	38.94	11.82	1.09	0.02	0.96
ZLD Filtercake Handling[a]	--	--	--	--	0.089
RERC 3&4 Daily Emissions	309.60	403.79	62.29	13.46	145.83
RERC 1&2 Daily Emissions	288.44	391.97	61.20	13.44	153.79
Total Facility Emissions	598.04	795.76	123.49	26.90	299.62

Source: RERC 2008a, RERC 2008e, CEC 2004

[a]The incremental emission rate resulting from ZLD Filtercake Handling for RERC 3&4 is assumed to be the same as the emission rate for RERC 1&2.

AIR QUALITY Table 17 summarizes the estimated annual levels of the different criteria pollutants from the RERC 3&4 project and the existing site facilities. To assess maximum annual emissions for RERC 3&4, the following assumptions were made:

Annual Emissions:

- Each turbine operates at full load for 920 hours per year.
- Each turbine operates in startup mode for 150 hours per year and shutdown mode for 150 hours per year.
- Each turbine is in maintenance for 10 hours per year.
- The cooling tower operates for 1,230 hours per year.
- The black-start engine operates for 54 hours per year.

- 93.1 tons of ZLD filtercake is handled annually.
- RERC 1&2 annual emissions are based on applicant supplied data of final SCAQMD permit emission limits and modeling inputs.

AIR QUALITY Table 17
RERC Annual Emissions, tons/year

Gas Turbines (2)	**NO_x**	**CO**	**VOC**	**SO_x**	**PM10/PM2.5**
Normal Operations	3.83	6.09	1.17	0.34	2.76
Startup	1.65	1.74	0.17	0.0	0.41
Shutdown	0.92	1.64	0.19	0.0	0.45
Maintenance	0.45	0.46	0.01	0.0	0.03
Cooling Tower	--	--	--	--	0.02
Black-Start Engine	0.35	0.11	0.01	0.0	0.01
ZLD Filtercake Handling[a]	--	--	--	--	0.0002
RERC 3&4 Annual Emissions	7.21	10.04	1.55	0.34	3.68
RERC 1&2 Annual Emissions	8.60	10.82	1.49	0.36	3.92
Total Facility Emissions	15.81	20.86	3.04	0.71	7.60

Source: RERC 2008a, RERC 2008e, CEC 2004
[a]The incremental emission rate resulting from ZLD Filtercake Handling for RERC 3&4 is assumed to be the same as the emission rate for RERC 1&2.

The emissions shown in **AIR QUALITY Table 17** were corrected as necessary to match the modeled emissions, when the modeled emissions were higher than the emissions shown elsewhere in the SPPE application.

Following is the Environmental Checklist that identifies potential impacts in this issue area. Below the checklist are discussions of each impact, and an explanation of the impact conclusion.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
AIR QUALITY – Would the project:				
A. Conflict with or obstruct implementation of the applicable air quality plan? Ozone Plan PM10 Plan PM2.5 Plan Carbon Monoxide Maintenance Plan		 X X X X		
B. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		X		
C. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?		X		
D. Expose sensitive receptors to substantial pollutant concentrations?		X		
E. Create objectionable odors affecting a substantial number of people?			X	
F. Create substantial greenhouse gas emissions that would conflict with state and federal greenhouse gas policies and goals?			X	

METHOD FOR DETERMINING SIGNIFICANCE AND MITIGATION

Staff used two main significance criteria in evaluating this project. First, all project emissions of nonattainment criteria pollutants and their precursors (NOx, VOC, PM10 and SO_2) are considered significant and must be mitigated. Second, any AAQS violation or any contribution to any AAQS violation caused by any project emissions is considered to be significant and must be mitigated. For construction emissions, the mitigation that is considered is limited to controlling both construction equipment tailpipe emissions and fugitive dust emissions to the maximum extent feasible. For operating emissions, the mitigation includes both feasible emission controls (BACT) and the use of emission reduction credits to offset emissions of nonattainment criteria pollutants and their precursors.

Using the significance criteria listed above, staff determines whether the project's emissions and resulting ambient air quality impacts are sufficiently mitigated by the use of control measures or emission reduction credits or both.

The ambient air quality standards that staff uses as a basis for determining project significance are health-based standards established by the ARB and U.S. EPA. They are set at levels to adequately protect the health of all members of the public, including those most sensitive to adverse air quality impacts such as the aged, people with existing illnesses, children, and infants, including a margin of safety.

A. Would the Project Conflict With or Obstruct Implementation of the Applicable Air Quality Plan? – Less than Significant With Mitigation Incorporated

The proposed project is located in western Riverside County, which is in the South Coast Air Basin (SoCAB) and is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD or District). The SoCAB is designated as non-attainment for both federal and state ozone, PM10 and PM2.5 standards. All other federal and state air contaminants (NO_2, CO, and SO_2) are considered to be either attainment of state and/or unclassified/attainment of federal standards. However, the SoCAB is a maintenance area for CO, which was just reclassified as attainment 2007.

The District is the lead agency for making progress towards attainment with air quality standards within the air basin. The district is responsible for developing those portions of the State Implementation Plan (SIP), and the Air Quality Management Plan (AQMP) that deals with certain stationary and area source controls. The California Air Resource Board is responsible for submitting the SIP to USEPA.

Ozone

The project would be required to comply with all applicable District rules and regulations, which specify the emissions control and offset requirements. The project would employ BACT and emission reduction credits (both RECLAIM credits and banked Emission Reduction Credits) to fully mitigate operational emissions of NOx and VOC. Additionally, the construction mitigation measures recommended by staff would comply with the control measures provided in the AQMP. Therefore, the project would not conflict with the District's ozone attainment plan.

PM10/PM2.5

The project would be required to comply with all applicable District rules and regulations, which specify the emissions control and offset requirements. The project would employ BACT and emission reduction credits to fully mitigate operational particulate emissions. Additionally, the project is not subject to the new federal New Source Review regulations for PM2.5 (SCAQMD 2008c). Additionally, the construction mitigation measures recommended by staff would comply with the control measures provided in the AQMP. Therefore, the project would not conflict with the District's PM10/PM2.5 attainment plan.

Carbon Monoxide (CO)

The project's maximum worst-case CO impacts, analyzed using regulatory approved modeling techniques (see discussion below under Impact "B"), were found to result in concentrations well below the CO ambient air quality standards. Therefore, the project would not conflict with or obstruct the District's CO attainment maintenance plan.

B. Would the Project Violate any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation? – Less than Significant With Mitigation Incorporated

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 significantly diluted by the time they reach ground level. The emissions from the proposed project 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 micrograms per cubic meter ($\mu g/m^3$).

The applicant has used EPA-approved screening (SCREEN3) and refined (AERMOD version 07026) models to estimate the direct impacts of the project's NOx, PM10, CO, and SOx emissions resulting from project construction and operation.

Staff added the applicant's modeled impacts to the available highest ambient background concentrations as shown in **AIR QUALITY Table 10**. Staff 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.

In general, the inputs for the modeling include stack information (exhaust flow rate, temperature, and stack dimensions), specific turbine 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 surface hourly wind speeds and directions measured at the Riverside Airport, which is the closest complete meteorological data source to the project site, for a five year period (2000 through 2004).

Construction Impacts

The construction equipment engine emissions were modeled as multiple point sources covering the project construction area. The construction fugitive dust emissions were modeled as a single area source that covered the active area of the construction site. For the determination of one-hour average construction NO_2 concentrations the applicant used distance dependant NO to NO_2 conversion values that are provided by the SCAQMD (RERC 2008a). This methodology provides a conservative estimate for the chemical reaction of NO emissions, which in the SCAQMD methodology is initially assumed to be 95 percent of the NOx emissions from diesel-fueled construction equipment, to NO_2. The SCAQMD conversion table shows complete reaction to NO_2 at 500 meters from the source of emissions (SCAQMD 2008b).

To determine the construction impacts on short-term ambient standards (i.e. 1-hour through 24 hours) the worst-case daily on-site construction emission levels shown in **AIR QUALITY Table 11** were modeled. For pollutants with annual average ambient standards, the annual on-site emissions levels as shown in **AIR QUALITY Table 12** were used. Modeling assumed that all of the equipment would operate from 8 am to 4 pm daily (RERC 2008a). **AIR QUALITY Table 18** provides the results of this modeling analysis.

As can be seen from the modeling results provided in **AIR QUALITY Table 18**, the construction impacts have the potential to worsen the existing violations of the PM10 and PM2.5 ambient air quality standards and are, therefore, potentially significant. The applicant's construction modeling analysis indicates that the maximum NOx, CO and SO_2 impacts would remain below the CAAQS and NAAQS.

AIR QUALITY Table 18
Units 3&4 Construction Impacts, (μg/m^3)

Pollutant	Averaging Period	Project Impact (μg/m^3)	Background (μg/m^3) [b]	Total Impact (μg/m^3)	Limiting Standard (μg/m^3)	Type of Standard	Percent of Standard
NO_2 [a]	1 hour	18.1	145	163.1	338	CAAQS	48
	annual	4.2	41	45.2	56	CAAQS	81
PM10	24 hour	42.1	119	161.1	50	CAAQS	322
	Annual	7.5	57.1	64.6	20	CAAQS	323
PM2.5	24 hour	10.4	47.7	58.1	35	NAAQS	166
	Annual	1.8	18.3	20.1	12	CAAQS	168
CO	1 hour	228.8	4,600	4,829	23,000	CAAQS	21
	8 hour	101.2	2,656	2,757	10,000	CAAQS	28
SO_2	1 hour	0.22	63	63	655	CAAQS	10
	3 hour	0.10	57	57	1,300	NAAQS	4
	24 hour	0.04	28	28	105	CAAQS	27
	annual	0.01	8	8	80	NAAQS	10

Source (RERC 2008a)
[a] One-hour NO_2 value was determined using distance dependant NO to NO_2 conversion values from SCAQMD. The annual value was adjusted by multiplying by the Annual NOx Ratio Method (ARM) EPA default value of 0.75.
[b] Background values have been adjusted per staff recommended background concentrations shown in AIR QUALITY Table 10.

The maximum construction impacts generally occur at fence line. The maximum residential receptor particulate matter impacts, determined from the review of the applicants modeling files, are 1.54 μg/m^3 for 24-hour PM10 and 0.51 μg/m^3 for 24-hour PM2.5 (RERC 2008a).

Staff's review of the construction emissions estimates and air dispersions modeling procedures and considers them to be adequate and generally conservative for this siting case.

Construction Impacts Mitigation

The applicant has proposed the following construction mitigation measures: (RERC 2008a)

- Fuel Selection - Ultra-low sulfur fuel is available in the South Coast region and would be used in construction equipment.
- Construction Equipment – To the extent practical, construction would be conducted using EPA-certified non-road engines. These engines are expected to have lower PM and NOX emissions than similar non-certified models. The use of Tier 1 nonroad engines is also recognized mitigation for greenhouse gases.
- Dust Suppression – Water would be applied to the construction site to reduce fugitive emissions during work hours.
- On-road Road Dust Control – If warranted, the facility would include a track-out control device. If on-road dust becomes problematic, truck tires may be washed prior to exiting the facility. Street sweeping activities on the adjoining roads may also be conducted to minimize road dust emissions.

As described in the “Laws, Ordinances, Regulations, and Standards” section, District Regulation IV (Rule 403) limits fugitive dust during the construction phase of a project. The applicant’s revised PM10/PM2.5 emission estimate assumes a very aggressive control efficiency factor for fugitive dust (85 percent), which staff believes to be potentially overly optimistic for the control measures necessary Rule 403 compliance. However, even if the emission and modeling analyses performed by the applicant were assumed to be reasonably accurate, the modeling analysis shows that the mitigated construction PM10 and PM2.5 impacts would add to existing exceedances of the ambient air quality standards and the construction NOx and VOC emissions would add ozone precursor emissions into the air basin. Therefore, staff believes that all reasonable feasible construction emission mitigation measures are needed to mitigate the potentially significant construction PM10 impacts.

Staff recommends construction PM10 and NOx emission mitigation measures that integrate the mitigation measures proposed by the applicant, and add several additional construction PM10 emission mitigation measures and upgrade the construction equipment mitigation measures to assure maximum feasible fugitive dust control performance and construction equipment exhaust emissions control. These control measures, as well as, compliance assurance measures are provided staff recommended Conditions of Exemption **AQ-SC1** through **AQ-SC5**.

Staff recommends **AQ-SC1** to require the applicant to have an on-site construction mitigation manager who would be responsible for the implementation and compliance of the construction mitigation program. The documentation of the ongoing implementation and compliance with the construction mitigation program would be provided in the monthly construction compliance report that is required in staff’s recommended Condition of Exemption **AQ-SC2**.

Staff incorporated and augmented the applicant’s proposed fugitive dust mitigation and recommends that the fugitive dust mitigation measures be formalized in

Condition of Exemption **AQ-SC3**. **AQ-SC3** includes the following fugitive dust control measures:

- All unpaved roads and disturbed areas in the project and linear construction sites shall be watered as frequently as necessary to comply with the dust mitigation objectives of **AQ-SC4**. The frequency of watering may be reduced or eliminated during periods of precipitation.
- No vehicle shall exceed 10 miles per hour within the construction site.
- The construction site entrances shall be posted with visible speed limit signs.
- All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways.
- Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.
- All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways.
- All construction vehicles shall enter the construction site through the treated entrance roadways, unless an alternative route has been submitted to and approved by the CPM.
- Construction areas adjacent to any paved roadway shall be provided with sandbags or other measures as specified in the Storm Water Pollution Prevention Plan (SWPPP) to prevent run-off to roadways.
- All paved roads within the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.
- At least the first 500 feet of any public roadway exiting from the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff from the construction site is visible on the public roadways.
- All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or shall be treated with appropriate dust suppressant compounds.
- All vehicles that are used to transport solid bulk material on public roadways and that have the potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least two feet of freeboard.
- Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

Staff recommends Condition of Exemption **AQ-SC4** to limit the potential offsite impacts from visible dust emissions from the construction activities.

Staff recommends Condition of Exemption **AQ-SC5** to mitigate the NOx and PM emissions from the large diesel-fueled construction equipment. Implementation of this mitigation measure would meet the general intent of the engine NOx emission reduction measure recommendations in the SCAQMD AQMP (SCAQMD 2007), as well as providing additional PM mitigation to supplement the recommended fugitive dust mitigation measures. This condition requires the use of EPA/CARB Tier 2 engine compliant equipment for equipment over 50 horsepower where available and includes equipment idle time restrictions. The Tier 2 standards include engine emission standards for NOx plus non-methane hydrocarbons, CO, and PM emissions. The Tier 2 standards became effective for engine/equipment model years 2001 to 2004 for engines between 50 and 750 horsepower.

Based on the relatively short-term nature of the worst-case construction impacts, and staff's recommendation of requiring all feasible construction emission mitigation measures, staff believes that the construction air quality impacts would be less than significant with the implementation of the mitigation measures contained in the recommended Conditions of Exemption.

Operation Impacts

The applicant performed a refined modeling analysis to identify off-site criteria pollutant impacts from operational emissions of the proposed project. Turbine emission rates were first calculated from equipment vendor estimates for nine operating conditions (RERC 2008a, Appendix 6.1F):

- Three load cases, 100 percent load, 75 percent load, and 50 percent load for both CTGs.
- Three different ambient conditions, winter day, yearly average, and hot summer day.

These conditions were then modeled to determine the worst case short term conditions and the assumptions to be used for the stack parameters to be used in the modeling analysis. For annual modeling the stack parameters associated with yearly average ambient conditions and 100 percent load were used.

The AERMOD model (Version 07026) was used for the modeling analysis. The applicant's predicted maximum concentrations of the non-reactive pollutants for the RERC 3&4 project for normal operations, startup/shutdown operations, initial commissioning/maintenance events, and fumigation conditions are summarized in **AIR QUALITY Table 19** through **AIR QUALITY Table 22**, respectively. The assumptions the applicant used for the various modeling scenarios are as follows:

- The normal operation modeling assumes 100 percent load emissions from the turbines and operation of the cooling tower.
- The startup/shutdown short-term NO_2 and CO modeling assumes both turbines are in startup mode.
- The fumigation short-term NO_2 and CO modeling assumes 100 percent load emissions from the turbines.

- The initial commissioning short-term NO_2 and CO modeling assumes one turbine at highest initial commissioning/maintenance emission levels and one turbine at 100 percent full load.
- The black-start engine emissions were considered part of the existing facility and modeling results with the black-start engine are included in the facility cumulative modeling analysis presented below in Impact Issue “C”.

The PM10 and PM2.5 modeling used incorrect emission values for the cooling tower. The calculations regarding drift rate and water total dissolved solids (TDS) content was corrected in Data Response 10, but was not remodeled. Staff remodeled maximum daily emissions using the corrected cooling tower PM emission rates and provides corrected the PM10 and PM2.5 concentration results presented in these tables.

The normal operating emissions that were modeled are based on the values given in **AIR QUALITY Tables 14**, **16** and **17**.

Air Quality Table 19
RERC 3&4 Normal Operating Impacts, (μg/m³)

Pollutant	Averaging Period	Project Impact (μg/m³)	Background (μg/m³) [a]	Total Impact (μg/m³)	Limiting Standard (μg/m³)	Type of Standard	Percent of Standard
NO_2	1 hour	1.69	145	146.7	338	CAAQS	43
	Annual	0.04	41	41	56	CAAQS	73
PM10	24 hour [b]	0.59	119	119.6	50	CAAQS	239
	Annual	0.02	57.1	57.1	20	CAAQS	286
PM2.5	24 hour	0.59	47.7	48.3	35	NAAQS	138
	Annual	0.02	18.3	18.3	12	CAAQS	153
CO	1 hour	4.83	4,600	4,605	23,000	CAAQS	20
	8 hour	1.78	2,656	2,658	10,000	CAAQS	27
SO_2	1 hour	0.20	63	63	655	CAAQS	10
	3 hour	0.11	57	57	1,300	NAAQS	4
	24 hour	0.03	28	28	105	CAAQS	27
	Annual	0.00	8	8	80	NAAQS	10

Source: (RERC 2008a).

[a] Background values have been adjusted per staff recommended background concentrations shown in **AIR QUALITY Table 10**.

[b] The PM10 emissions were remodeled by staff after correcting the RERC 3&4 chiller cooling tower emission basis per data response 10 (RERC 2008d).

The short-term startup/shutdown short-term operating emissions that were modeled are based on emission values given in **AIR QUALITY Table 14**.

Air Quality Table 20
RERC 3&4 Startup/Shutdown Impacts, (µg/m^3)

Pollutant	Averaging Period	Project Impact (µg/m^3)	Background (µg/m^3) [a]	Total Impact (µg/m^3)	Limiting Standard (µg/m^3)	Type of Standar d	Percent of Standard
NO_2	1 hour	4.48	145	149.5	338	CAAQS	44
CO	1 hour	8.50	4,600	4,609	23,000	CAAQS	20
	8 hour	2.41	2,656	2,658	10,000	CAAQS	27

Source: (RERC 2008a).
[a] Background values have been adjusted per staff recommended background concentrations shown in **AIR QUALITY Table 10**.

The short-term initial commissioning/maintenance event operating emissions that were modeled are based on hourly initial commissioning emission values given in **AIR QUALITY Table 13** and based on hourly normal operating emission values given in **AIR QUALITY Table 14**.

Air Quality Table 21
RERC 3&4 Initial Commissioning Impacts

Pollutant	Averaging Period	Project Impact (µg/m^3)	Background (µg/m^3) [a]	Total Impact (µg/m^3)	Limiting Standard (µg/m^3)	Type of Standard	Percent of Standard
NO_2	1 hour	9.985	145	155	338	CAAQS	46
CO	1 hour	19.361	4,600	4,619	23,000	CAAQS	20
CO	8 hour	6.773	2,656	2,663	10,000	CAAQS	27

Source: (RERC 2008a).
[a] Background values have been adjusted per staff recommended background concentrations shown in **AIR QUALITY Table 10**.

It is currently unknown if SCAQMD would limit the initial commissioning to one turbine operating without controls at a time, as was modeled; however, even if two turbines are operating without controls during initial commissioning the results from **AIR QUALITY Table 21** would indicate that the combined emissions would not cause exceedances of the short-term NO_2 or CO ambient air quality standards.

The fumigation modeling presented in **AIR QUALITY Table 22** was conducted using the SCREEN3 model and use hourly normal operating emission levels presented in **AIR QUALITY Table 14**.

Air Quality Table 22
RERC 3&4 Fumigation Impacts, (µg/m^3)

Pollutant	Averaging Period	Turbines Impact (µg/m^3)	Background (µg/m^3) [a]	Total Impact (µg/m^3)	Limiting Standar d (µg/m^3)	Type of Standard	Percent of Standard
NO_2	1 hour	2.56	145	147.6	338	CAAQS	44
CO	1 hour	4.06	4,600	4,604	23,000	CAAQS	20
SO_2	1 hour	0.17	63	63.2	655	CAAQS	10

Source: (RERC 2008a).
[a] Background values have been adjusted per staff recommended background concentrations shown in **AIR QUALITY Table 10**.

The modeling results indicate that operation of RERC 3&4 would not create new exceedances of the NO_2, SO_2, or CO ambient air quality standards. However, if unmitigated the PM and PM precursor emissions would contribute to existing PM standard exceedances and the ozone precursor emissions (NOx and VOC) would also contribute to existing ozone standard exceedances.

Operation Mitigation

As discussed in the project description section, the applicant proposes to employ water injection, SCR with ammonia injection, CO catalyst, and operate exclusively on pipeline quality natural gas to limit turbine emission levels (RERC 2008a). The cooling tower would have a mist eliminator rated to 0.001 percent drift control to mitigate PM emissions. Additionally, the black-start engine, which the applicant does not consider to be part of this application, would be a Tier 2 rated engine to control exhaust emissions.

The SPPE Application (RERC 2008a) provides the following BACT emission limits, each for the two CTGs:

- NOx: 2.3 ppmvd at 15 percent O_2 and 4.17 lbs/hr (one-hour average, excluding startup/shutdown and maintenance events)
- CO: 6.0 ppmvd at 15 percent O_2 and 6.62 lbs/hr (one-hour average, excluding startup/shutdown and maintenance events)
- VOC: 2.0 ppmvd at 15 percent O_2 and 1.27 lbs/hr
- PM10: 3.0 lb/hr
- SO_2: 0.28 lb/hr (assumed fuel sulfur content of 0.20 grains/100 scf)
- NH_3: 5 ppmvd at 15 percent O_2 (1-hour average) and 3.33 lb/hr

District Rule 1303 requires that the applicant provide emission offsets, in the form of banked ERCs, for the project’s emissions exceeding the SCAQMD offset thresholds (4 tons/year for NOx, SOx, PM10 and VOC). However, NOx is being permitted separately through the District’s RECLAIM program (Regulation XX), so NOx emission offsets would be obtained through the purchase of annual NOx RECLAIM credits. The first year’s RECLAIM credits (13,720 lbs from Acct. #700128) have been secured (Tatterson 2008). For the other criteria pollutants, RERC 3&4, in combination with RERC 1&2, would have PM10 emissions exceeding the District offset thresholds.

The applicant is proposing to offset its incremental PM10 and VOC emissions through the use of offset credits. The emission credits secured, 36 pounds per day for PM10 and nine pounds per day for VOC (aka ROG), are all from reductions that have occurred in the Inland Empire area. The secured emission reduction credit information is provided in **AIR QUALITY Table 23**.

AIR QUALITY Table 23
RERC 3&4 Secured Emission Reduction Credits

Pollutant	Certificate Number	Amount (lb/day)	Year
PM10	AQ000218	2	All
	AQ007850[a]	20	2008
	AQ007851	20	2009
	AQ007852	20	2010
	AQ007853	20	2011
	AQ007854	20	2012
	AQ007855	20	2013
	AQ007856	20	2014
	AQ007857	20	2015 and up
	AQ007813	7	2008
	AQ007814	7	2009
	AQ007815	7	2010
	AQ007816	7	2011
	AQ007817	7	2012
	AQ007818	7	2013
	AQ007819	7	2014
	AQ007820	7	2015 and up
	AQ006800	7	2008
	AQ006802	7	2009
	AQ006804	7	2010
	AQ006806	7	2011
	AQ006808	7	2012
	AQ006810	7	2013
	AQ006812	7	2014 and up
ROG	AQ00715	9	All

Source: Tatterson 2008
[a] District Rule 1309 "Emission Reduction Credits and Short Term Credits" requires the issuance of newly banked emission reduction credits as short-term credits for the first seven years after issuance and as a permanent credit thereafter [Rule 1309 (f) (1) (C)]. Therefore, credits AQ007850 through AQ007857 are from the same banked emission reduction source, as is true for credits AQ007813 through AQ07820 and AQ006800 through AQ006812.

This level of emission reduction credits is equivalent to 6.57 tons per year (36 lbs/day times 365 days/year) of PM10 reduction and 1.64 tons per year of VOC reduction, which are greater than the estimated maximum annual emissions of PM10 and SOx (as a precursor to PM10) combined (4.02 tons) and VOC (1.57 tons) for the RERC 3&4 facility. Therefore, along with the RECLAIM NOx credits these emission reduction credits would fully offset the nonattainment pollutant and precursor emissions for the project.

Staff has made a preliminary determination that the applicant's offset proposal should meet District requirements and would meet the staff's CEQA mitigation requirements. Staff's acceptance of this offset package was determined solely based on the merits of this case, including the District offset requirements, the project's emission limits, the specific ERCs proposed, and ambient air quality considerations of the region, and does not in any way provide a precedent or obligation for the acceptance of offset proposals for any other current or future licensing cases. Staff recommends Conditions of Exemption **AQ-SC6** for record keeping and for tracking of the project's construction and operation.

C. Would the Project Result in a Cumulatively Considerable Net Increase of any Criteria Pollutant for Which the Project Region is Non-Attainment under an Applicable Federal or State Ambient Air Quality Standard? – Less than Significant With Mitigation Incorporated

"Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or . . . compound or increase other environmental impacts." (CEQA Guidelines, § 15355) A cumulative impact consists of an impact that is created as a result of a combination of the project evaluated in the EIR together with other projects causing related impacts." (CEQA Guidelines, § 15130(a)(1)) Such impacts may be relatively minor and incremental, yet still be significant because of the existing environmental background, particularly when one considers other closely related past, present, and reasonably foreseeable future projects.

This analysis is concerned with "criteria" air pollutants. Such pollutants have impacts that are usually (though not always) cumulative by nature. Rarely will a project cause a violation of a federal or state criteria pollutant standard. However, a new source of pollution may contribute to violations of criteria pollutant standards because of the existing background sources or foreseeable future projects. Air districts attempt to attain the criteria pollutant standards by adopting attainment plans, which comprise a multi-faceted programmatic approach to such attainment. Depending on the air district, these plans typically include requirements for air offsets and the use of Best Available Control Technology for new sources of emissions, and restrictions of emissions from existing sources of air pollution.

Much of the preceding discussion is concerned with cumulative impacts. The "Existing Ambient Air Quality" section describes the air quality background in the South Coast Air Basin, including a discussion of historic ambient levels for each of the significant criteria pollutants. The discussion under impact issue "A" provides a summary of projections for criteria pollutants by the air district and the air district's programmatic efforts to abate such pollution. The discussion under impact issue "B" identifies the project's contribution to the local existing background caused by project construction and operation. The following discussion under this impact issue area includes two additional analyses:

- an analysis of the project's "localized cumulative impacts", the project's direct operating emissions combined with other local major emission sources;
- a discussion of chemically reactive pollution impacts, ozone and PM2.5.

Localized Cumulative Impacts

Since the power plant air quality impacts can be reasonably estimated through air dispersion modeling (see Operational Modeling Analysis section) the project contributions to localized cumulative impacts can be estimated. To represent "past" and, to an extent, "present projects" that contribute to ambient air quality conditions, the Commission staff recommends the use of ambient air quality monitoring data (see Environmental Setting section), referred to as the "background". The staff undertakes the following steps to estimate what are additional appropriate "present projects” that are not represented in the background and “reasonably foreseeable projects”:

- First, the Commission staff (or the applicant) works with the air district to identify all projects that have submitted, within the last year of monitoring data, new applications for an authority to construct (ATC) or permit to operate (PTO) and applications to modify an existing PTO within six miles of the project site. Based on staff’s modeling experience, beyond six miles there is no statistically significant concentration overlap for non-reactive pollutant concentrations between two stationary emission sources.
- Second, the Commission staff (or the applicant) works with the air district and local counties to identify any new area sources within six miles of the project site. As opposed to point sources, area sources include sources like agricultural fields, residential developments or other such sources that do not have a distinct point of emission. New area sources are typically identified through draft or final Environmental Impact Reports (EIR) that are prepared for those sources. The initiation of the EIR process is a reasonable basis on which to determine what is “reasonably foreseeable” for new area sources.
- The data submitted, or generated from the applications with the air district for point sources or initiating the EIR process for area sources provides enough information to include these new emission sources in air dispersion modeling. Thus, the next step is to review the available EIR(s) and permit application(s), determine what sources must be modeled and how they must be modeled.
- Sources that are not new, but may not be represented in ambient air quality monitoring are also identified and included in the analysis. These sources include existing sources that are co-located with or adjacent to the proposed source (such as an existing power plant). In most cases, the ambient air quality measurements are not recorded close to the proposed project, thus a local major source might not be well represented by the background air monitoring. When these sources are included, it is typically a result of there being an existing source on the project site and the ambient air quality monitoring station being more than 2 miles away.
- The modeling results must be carefully interpreted so that they are not skewed towards a single source, in high impact areas near that source’s fence line. It is not truly a cumulative impact of the RERC 3&4 project if the high impact area is the result of high fence line concentrations from another stationary source and RERC 3&4 is not providing a substantial contribution to the determined high impact area.

Once the modeling results are interpreted, they are added to the background ambient air quality monitoring data and thus the modeling portion of the cumulative assessment is complete. Staff typically assists the applicant in finding sources (as described above), characterizing those sources and interpreting the results of the modeling. However, the actual modeling runs are usually left to the applicant to complete. There are several reasons for this; modeling analyses take time to perform and require significant expertise, the applicant has already performed a modeling analysis of the project alone (see impact issue “B”), and the applicant can act on its own to modify the project as the results warrant. Once the cumulative project emission impacts are determined, the necessity to mitigate the project emissions can be evaluated, and the mitigation itself can be proposed by staff and/or applicant.

The applicant, in consultation with the District, has conducted a survey of projects located within six miles of the project site that are under construction, or have received permits to be built or operate in the foreseeable future, or have provided permit applications to the District. The zip code survey conducted by the District found 50 projects (RERC 2008d), some of which are outside of the six mile radius. Of the 50 sources identified by the District:

- 26 were indicated to have no emission increase,
- 13 were identified as emergency engines that would not emit pollutants on a normal basis,
- 5 were VOC sources (i.e. lithographic coating, etc.) and are not appropriate for modeling, and
- the remaining 6 had minimal emissions, well less than a ton per year of any specific non-VOC criteria pollutant.

Therefore, none of the District's identified 50 sources would have the potential, along with the project, to create significant cumulative impacts. However, the applicant did model the existing RERC 1&2 in combination with RERC 3&4 to determine worst-case impacts from the entire RERC site. The results of this modeling effort, **AIR QUALITY Tables 24 through 27**, show that RERC 3&4, along with RERC 1&2, would contribute to existing violations of the PM10 and PM2.5 ambient air quality standards. The results also show that RERC 3&4, along with RERC 1&2, would not contribute to new AAQS violations for any of the other pollutants modeled.

The applicant's predicted maximum concentrations of the non-reactive pollutants for the entire RERC site for normal operations, startup/shutdown operations, initial commissioning/maintenance events, and fumigation conditions are summarized in **AIR QUALITY Table 24** through **AIR QUALITY Table 27**, respectively.

Air Quality Table 24
RERC Combined Normal Operating Impacts, (μg/m³)

Pollutant	Averaging Period	Project Impact (μg/m³)	Background (μg/m³) [a]	Total Impact (μg/m³)	Limiting Standard (μg/m³)	Type of Standard	Percent of Standard
NO_2	1 hour	20.31	145	165.3	338	CAAQS	49
	Annual	0.10	41	41.1	56	CAAQS	73
PM10	24 hour	1.23	119	120.3	50	CAAQS	241
	Annual	0.04	57.1	57.1	20	CAAQS	286
PM2.5	24 hour	1.23	47.7	48.9	35	NAAQS	140
	Annual	0.04	18.3	18.3	12	CAAQS	152
CO	1 hour	61.85	4,600	4,662	23,000	CAAQS	20
	8 hour	3.67	2,656	2,660	10,000	CAAQS	27
SO_2 [c]	1 hour	0.41	63	63.4	655	CAAQS	10
	3 hour	0.21	57	57.2	1,300	NAAQS	4
	24 hour	0.06	28	28.1	105	CAAQS	27
	Annual	0.00	8	8	80	NAAQS	10

Source: (RERC 2008a).
[a] Background values have been adjusted per staff recommended background concentrations shown in **AIR QUALITY Table 10**.
[b] The PM10 emissions were remodeled by staff after correcting the RERC 3&4 chiller cooling tower emission basis per data response 10 (RERC 2008d).

Air Quality Table 25
RERC Combined Startup/Shutdown Impacts, (μg/m³)

Pollutant	Averaging Period	Project Impact (μg/m³)	Background (μg/m³) [a]	Total Impact (μg/m³)	Limiting Standard (μg/m³)	Type of Standard	Percent of Standard
NO_2	1 hour	20.31	145	165.3	338	CAAQS	49
CO	1 hour	61.85	4,600	4,662	23,000	CAAQS	20
	8 hour	5.04	2,656	2,661	10,000	CAAQS	27

Source: (RERC 2008a).
[a] Background values have been adjusted per staff recommended background concentrations shown in **AIR QUALITY Table 10**.

Air Quality Table 26
Maximum RERC Initial Commissioning Impacts

Pollutant	Averaging Period	Project Impact (μg/m³)	Background (μg/m³) [a]	Total Impact (μg/m³)	Limiting Standard (μg/m³)	Type of Standard	Percent of Standard
NO_2	1 hour	20.31	145	165.3	338	CAAQS	49
CO	1 hour	61.85	4,600	4,662	23,000	CAAQS	20
CO	8 hour	8.44	2,656	2,664	10,000	CAAQS	27

Source: (RERC 2008a).
[a] Background values have been adjusted per staff recommended background concentrations shown in **AIR QUALITY Table 10**.

Air Quality Table 27
Maximum Units 3&4 Fumigation Impacts, (µg/m^3)

Pollutant	Averaging Period	Turbines Impact (µg/m^3)	New Engine Impacts (µg/m^3) [a]	Background (µg/m^3) [a]	Total Impact (µg/m^3)	Limiting Standard (µg/m^3)	Type of Standard	Percent of Standard
NO_2	1 hour	5.33	1.314	145	151.6	338	CAAQS	45
CO	1 hour	8.12	0.399	4,600	4,609	23,000	CAAQS	20
SO_2	1 hour	0.34	0.001	63	63.3	655	CAAQS	10

Source: (RERC 2008a).
[a] Background values have been adjusted per staff recommended background concentrations shown in **AIR QUALITY Table 10**.

The modeling results indicate that operation of the entire RERC facility would not cumulatively create new exceedances of the NO_2, SO_2, or CO ambient air quality standards. However, if unmitigated the PM and PM precursor emissions would contribute to existing PM standard exceedances and the ozone precursor emissions (NOx and VOC) would also contribute to existing ozone standard exceedances.

The RERC 3&4 project would provide RECLAIM credits for NOx and emission reduction credits for PM10 and VOC. These offsets would fully offset the nonattainment pollutant emissions for the facility. The RERC 1&2 project provided emission reductions through engine retrofits to offset its emission not otherwise required to be offset by SCAQMD. Therefore, the entire site’s nonattainment pollutant emissions would be fully offset so the site’s cumulative operating impacts after mitigation are considered to be less than significant.

Staff has considered the minority population surrounding the site (see Socioeconomics Figure 1). Since the project’s cumulative air quality impacts have been mitigated to less than significant, there is no environmental justice issue for air quality.

Chemically Reactive Pollutant Impacts

Ozone Impacts

The project’s gaseous emissions of NOx, SO_2, VOC and ammonia can contribute to the formation of secondary pollutants: ozone and PM10/PM2.5.

There are air dispersion models that can be used to quantify ozone impacts, but they are used for regional planning efforts where hundreds or even thousands of sources are input into the modeling to determine ozone impacts. 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 RERC 3&4 project do have the potential (if left unmitigated) to contribute to higher ozone levels in the region. These impacts would be cumulatively significant because they would contribute to ongoing violations of the state and federal ozone ambient air quality standards.

PM2.5 Impacts

Secondary PM10 formation, which is assumed to be 100 percent PM2.5, is the process of conversion from gaseous reactants to particulate products. The process of gas-to-particulate conversion, which occurs downwind from the point of emission, is complex and depends on many factors, including local humidity and the presence of air pollutants. The basic process assumes that the SOx and NOx emissions are converted into sulfuric acid and nitric acid first, and then react with ambient ammonia to form sulfate and nitrate. The sulfuric acid reacts with ammonia much faster than nitric acid and converts completely and irreversibly to particulate form. Nitric acid reacts with ammonia to form both a particulate and a gas phase of ammonium nitrate. The particulate phase will tend to fall out, however the gas phase can revert back to ammonia and nitric acid. Thus, under the right conditions, ammonium nitrate and nitric acid establish a balance of concentrations in the ambient air. There are two conditions that are of interest, described as “ammonia rich” and “ammonia poor.” The term “ammonia rich” indicates that there is more than enough ammonia to react with all the sulfuric acid and to establish a balance of nitric acid-ammonium nitrate. Further ammonia emissions in this case would not necessarily lead to increases in ambient PM2.5 concentrations. In the case of an “ammonia poor” environment, there is insufficient ammonia to establish a balance and thus additional ammonia would tend to increase PM2.5 concentrations.

While there would certainly be some conversion from the ammonia emitted from the RERC 3&4 project, there is currently no regulatory model that can predict the conversion rate. However, because of the known relationship of NOx and SOx emissions to PM2.5 formation, it can be said that the emissions of NOx and SOx from the RERC 3&4 project do have the potential (if left unmitigated) to contribute to higher PM2.5 levels in the region.

Summary

The applicant is proposing to mitigate the project’s NOx, VOC, SO_2, and PM10 emissions through the use of acquired and District provided emission offsets and limit the ammonia slip emissions to 5 ppm. The ozone precursor (NOx and VOC) and PM/PM precursor (PM10, NOx, and VOC) annual offsets are proposed by the applicant to be provided at a minimum 1:1 ratio. The NOx and VOC emissions would be directly offset at a minimum 1:1 ratio through the proposed use of RECLAIM credits and VOC ERCs. The proposed PM10 ERCs, which are equivalent to 6.57 tons per year of PM10, offset both the project’s PM10 emissions (3.68 tons per year) and the project’s SOx (0.34 tons per year) PM precursor emissions. With the proposed emission offsets, it is staff’s belief that the project after mitigation would have less than significant cumulative impacts.

D. Would the Project Expose Sensitive Receptors to Substantial Pollutant Concentrations? – Less than Significant With Mitigation Incorporated

For purposes of this analysis, sensitive receptors are defined as groups of individuals that may be more susceptible to health risks due to exposure to the project's emissions. Schools (public and private), day care facilities, convalescent homes, parks, and hospitals are of particular concern. The nearest known sensitive receptor is the Indian Hills Elementary School located about two thirds of a mile north of the project site. The nearest residence is located at the Hidden Valley Kennel located approximately 0.20 miles south of the project site, while the nearest major residential development is located one half mile north of the project site.

Temporary Construction Emissions

As described earlier under impact issue “B,” the proposed project would generate short-term, unavoidable emissions during its construction. As a result, nearby residential may experience short-term adverse air quality impacts, if mitigation measures were not incorporated. However, through the implementation of the suggested mitigation measures and Conditions of Exemption (**AQ-SC1** to **AQ-SC5**) during construction, it is assumed that the project would not result in any significant air quality impacts.

Operational Emissions

As described earlier under impact issue “B,” operation of the proposed project would emit a substantial level of criteria air contaminant emissions. However, these emissions would be fully mitigated by the surrender of emission reduction credits, by the applicant (NOx and PM10) and by the District (VOC and SOx), through the District’s NSR permitting program. The pollutant impact modeling did not show that any substantial pollutant concentrations would occur at any receptor location for any of the proposed operating scenarios. As a result, staff concludes that the criteria pollutant emissions generated from this project would not cause any significant air quality impacts to sensitive receptors.

E. Would the Project Create Objectionable Odors Affecting a Substantial Number of People? – Less than Significant

Construction activities do not normally create strong or objectionable odors. There would be some minor odors associated with construction vehicle refueling and surface treatments (e.g. structure painting and asphalt paving); however these odors would be limited in intensity and duration. Additionally, the closest sensitive receptor (Indian Hills School) is located approximately two thirds of a mile north of the project site and the closest major residential development, not including the single residence/kennel located approximately 0.20 miles south of the project site and few other single residences scattered in commercial areas, is located approximately one half mile to the north of the project site, which would allow any minor construction odors to disperse substantially before reaching sensitive or residential receptors. No significant impacts are expected from the temporary minor odor sources.

No significant emission of odorous compounds would result from the operation of the gas turbines, cooling tower, or black-start engine under normal operating conditions. The odor threshold for ammonia is approximately 5 ppm (ATSDR 2008), and stack emissions are proposed to be and expected to be permitted to 5 ppm on a 1-hour average basis[3]. There is the potential for ammonia peak concentrations being substantially higher than 5 ppm during start-up or during major load swings. However, after dispersion the ground level concentrations would be well below the

[3] This expectation is based on the air quality permit for RERC 1&2 (RERC 2008d).

ammonia odor threshold. Temporary odors resulting from accidental releases could occur; please see the **HAZARDOUS MATERIAL MANAGEMENT** section for further discussion of consequence analysis of ammonia storage and handling accidents. No significant odor impacts are expected from normal operation of the facility.

F. Would the Project Create Substantial Greenhouse Gas Emissions that Would Conflict with State or Federal Greenhouse Gas Policies and Goals?

Global Climate Change and Electricity Production

There is general scientific consensus that climate change is occurring and that human activity contributes in some measure (perhaps substantially) to that change. Man-made emissions of greenhouse gases, if not sufficiently curtailed, are likely to contribute further to continued increases in temperature that may result in catastrophic consequences. Indeed, the California Legislature finds that "[g]lobal warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California" (Cal. Health & Safety Code, Sec. 38500, Division 25.5, Part 1).

In 1998, the Energy Commission identified a range of strategies to prepare for an uncertain climate future, including a need to account for the environmental impacts associated with energy production, planning, and procurement (CEC 1998, p.5). In 2003, the Energy Commission recommended that the state require reporting of greenhouse gases (GHG) or global climate change[4] emissions as a condition of state licensing of new electric generating facilities (CEC 2003, IEPR p. 42). The Energy Commission's 2007 Integrated Energy Policy Report (IEPR) addresses climate change within the electricity, natural gas, and transportation sectors. For the electricity sector, it recommends such approaches as pursuing all cost-effective energy efficiency measures and meeting the Governor's stated goal of a 33 percent renewable portfolio standard.

In 2006, California enacted the California Global Warming Solutions Act of 2006 (AB 32). It requires the California Air Resources Board (ARB) to adopt standards that will reduce statewide GHG emissions to statewide GHG emissions levels in 1990, with such reductions to be achieved by 2020.[5] To achieve this, ARB has a mandate to define the 1990 emissions level and achieve the maximum technologically feasible and cost-effective GHG emission reductions.

The Energy Commission and the Public Utilities Commission are providing recommendations to ARB for how it should reduce emissions in the electricity and natural gas sectors. The agencies recommend a three-pronged approach: (1) require all retail providers in California to achieve all cost-effective energy efficiency, (2) surpass the current 20 percent renewable portfolio standard requirement, and (3) develop a multi-sector cap and trade system to obtain the remaining reductions in

[4] Global climate change is the result of greenhouse gases, or emissions with global warming potentials, affecting the energy balance, and thereby, climate of the planet. The term greenhouse gases (GHG) and global climate change (GCC) gases are used interchangeably.

[5] Governor Schwarzenegger has also issued Executive Order S-3-05 establishing a goal of 80 percent below 1990 levels by 2050.

the most cost-effective manner should ARB determine that a market mechanism is beneficial and passes the tests set forth in Part 4 and 5 of AB 32. To date, the agencies have issued two joint recommendation reports, the first involving the tracking and reporting of emissions and the second involving the point of regulation and allocation design principles.

The ARB adopted early action GHG reduction measures in October 2007, adopted mandatory reporting requirements and the 2020 statewide target in December, 2007, and plans to establish statewide emissions caps by economic “sectors” in 2008. By January 1, 2009, ARB will adopt a scoping plan that will identify how emission reductions will be achieved from significant sources of GHG via regulations, market mechanisms, and other actions. ARB staff will then draft regulatory language to implement its plan and will hold additional public workshops on each measure, including market mechanisms (ARB 2006b). The regulations must be effective by January 1, 2011, and mandatory compliance commences on January 1, 2012.

Examples of strategies that the state might pursue for managing GHG emissions in California, in addition to those recommended by the Energy Commission and the Public Utilities Commission, are identified in the California Climate Action Team’s Report to the Governor (CalEPA 2006). Others are being established by ARB during its 2008 scoping plan development process. Some strategies focus on reducing consumption of petroleum across all areas of the California economy. Improvements in transportation energy efficiency (fuel economy) and land use planning and alternatives to petroleum-based fuels are slated to provide substantial reductions by 2020 (CalEPA 2006). It has not yet been determined by ARB how it will apportion the required reductions; however, it is possible that GHG reductions mandated by ARB will be non-uniform or disproportional across emitting sectors, in that most reductions will be based on cost-effectiveness (i.e., the “most bang for the buck”).

SB 1368[6], also enacted in 2006, and regulations adopted by the Energy Commission and the Public Utilities Commission pursuant to the bill, prohibits utilities from entering into long-term commitments with any baseload facilities that exceed the Emission Performance Standard of 0.500 metric tonnes CO_2 per megawatt-hour[7] (1,100 pounds CO_2/MWh). Specifically, the Emission Performance Standard applies (EPS) to base load power from new power plants, new investments in existing power plants, and new or renewed contracts with terms of five years or more, including contracts with power plants located outside of California.[8] If a project, instate or out of state, plans to sell base load electricity to California utilities, the utilities will have to demonstrate that the project complies with the EPS. Baseload is defined as units which operate at a capacity factor higher than 60 percent of the year. As a peaking project with a permit operating restriction of less than 60 percent of the year, RERC 3&4 is not required to comply with the SB 1368 EPS.

[6] Public Utilities Code § 8340 et seq.

[7] The Emission Performance Standard only applies to carbon dioxide, and does not include emissions of other greenhouse gases converted to carbon dioxide equivalent.

[8] See Rule at http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/64072.htm

In addition to these programs, California is involved in the Western Climate Initiative, a multi-state and international effort to establish a cap and trade market to reduce greenhouse gas emissions in the west. The timelines for the implementation of this program are similar to those of AB 32, with full roll-out beginning in 2012. And as with AB 32, the electricity sector has been a major focus of attention.

Project Greenhouse Gas Emissions

The generation of electricity using fossil fuels can produce air emissions known as greenhouse gases in addition to the “criteria air pollutants” that have been traditionally regulated under the federal and state Clean Air Acts. Greenhouse gas emissions contribute to the warming of the earth’s atmosphere, leading to climate change. For fossil fuel-fired power plants, these include primarily carbon dioxide, with much smaller amounts of nitrous oxide (N_2O, not NO or NO_2, which are commonly known as NOx or oxides of nitrogen), and methane (CH_4 - unburned natural gas). Also included are sulfur hexafluoride (SF_6) from high voltage equipment, and hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) from refrigeration/chiller equipment. GHG emissions from the electricity sector are dominated by CO_2 emissions from the carbon-based fuels; other sources of GHG emissions are small and also are more likely to be easily controlled or reused/recycled, but are nevertheless documented here as some of the compounds have very large relative global warming potentials.

Construction

Construction of industrial facilities such as power plants requires coordination of numerous equipment and personnel. The concentrated on-site activities result in short-term, unavoidable increases in vehicle and equipment emissions that include greenhouse gases. The applicant has estimated the total construction period GHG emissions to be 2,887 metric tons CO_2 equivalent (RERC 2008a). Staff does not believe these increases would be significant for several reasons. First, the period of construction would be short-term and the emissions intermittent during that period, not ongoing during the life of the project. Additionally, control measures that staff recommends, such as limiting idling times and requiring, as appropriate, equipment that meet the latest emissions standards would further minimize greenhouse gas emissions since staff believes that the use of newer equipment would increase efficiency and reduce GHG emissions and be compatible with low-carbon fuel (e.g., bio-diesel and ethanol) mandates that would likely be part of the ARB regulations to reduce GHG from construction vehicles and equipment. For all these reasons, staff concludes that the short-term emission of greenhouse gases during construction would be sufficiently reduced and would, therefore, not be significant.

Operations

The proposed RERC 3&4 Project is a peaking project that would primarily only operate due to local demand needs, and would be restricted to an annual capacity factor of approximately 15 percent. The LM6000 PC Sprint gas turbines are fired with natural gas. The new black-start engine is fired on diesel fuel. There is no other onsite fuel burning equipment associated with the RERC 3&4 project and the employee and delivery traffic GHG emissions are not included in the operating emission GHG totals and are negligible in comparison with the gas turbine GHG emissions. The facility would also include new SF_6 containing equipment and the chillers would use a hydrofluorocarbon refrigerant (HCFC-123).

Air Quality Table AQ-28 shows what the proposed project, as permitted, could potentially emit in greenhouse gases on an annual basis. All emissions are converted to CO_2-equivalent and totaled. Electricity generation GHG emissions are dominated by CO_2 emissions from the carbon-based fuels; other sources of GHG are small and also are more likely to be easily controlled or reused/recycled, but are nevertheless documented here as some of the compounds have very large relative global warming potentials.

AIR QUALITY Table AQ-28
RERC 3&4, Estimated Maximum Annual Greenhouse Gas Emissions

	Project Emissions (metric tonnes [a] per year)	Global Warming Potential [b]	CO_2 Equivalent (metric tonnes per year)
Carbon Dioxide (CO_2)	62,087	1	62,087
Methane (CH_4)	4.6	21	96
Nitrous Oxide (N_2O)	1.6	310	493
Hexafloride (SF_6)	0.00045	23,900	11
Hydrofluorocarbons (HFCs)	0.0122	300 [c]	4
Perfluorocarbons (PFCs)	0	7,850 [d]	0
Total Project GHG emissions – mt CO_2–eq per year			62,691
Total Project MWh per year			113,300
Project CO_2 Emissions Performance - mt CO_2/MWh			0.548
Project GHG Emissions Performance - mt CO_2-eq/MWh			0.553

Source: RERC 2008a and RERC 2008g adjusted to CCAR emissions factors power plants (CCAR 2005), and staff estimate of net MWh/year.
a. One metric tonne (mt) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.
b. The global warming potential is a measure of the chemicals' warming properties and lifetime in the atmosphere relative to CO_2. The value shown is based on the emission factors from the California Climate Action Registry's Appendix to the General Reporting Protocol:Power Utility Reporting Protocol (CCAR 2005).
c. Can vary from 150 to 10,000, depending on the specific HFC. For HCFC-123 it is 300. However, it should be noted that HCFC-123 is not a currently named GHG under California Climate Action Registry reporting guidelines.
d. This figure is an average GWP for the two PFCs, CF_4 and C_2F_6.

AIR QUALITY Table AQ-29 provides an estimate of the actual RERC 1&2 GHG emissions for 2006 and 2007 for comparison.

AIR QUALITY Table AQ-29
Existing RERC Unit 1&2 Power Plant Operations and CO_2 Emissions

Year	MWh	GHG Emissions (mt CO_2eq)	GHG Rate (mt CO_2eq /MWh)
2006	43,798	24,013	0.548
2007	36,553	19,499	0.533
Averages [a]	80,351	43,512	0.542

Source: Independent staff assessment based on net generation and fuel use data supplied by the applicant (RERC 2008g).
Note:
a. Does not include SF_6 or refrigerant GHG emissions.

Since the project's permit limits operation to less than a 60 percent annual capacity factor, it does not need to meet the EPS of 0.500 mt CO_2/MWh.

The proposed RERC 3 & 4 project promotes the state's efforts to increase electrical generation efficiencies and reduce the amount of natural gas used by electricity generation and, thus, greenhouse gas emissions. As the 2007 Integrated Energy Policy Report (CEC 2007a) noted:

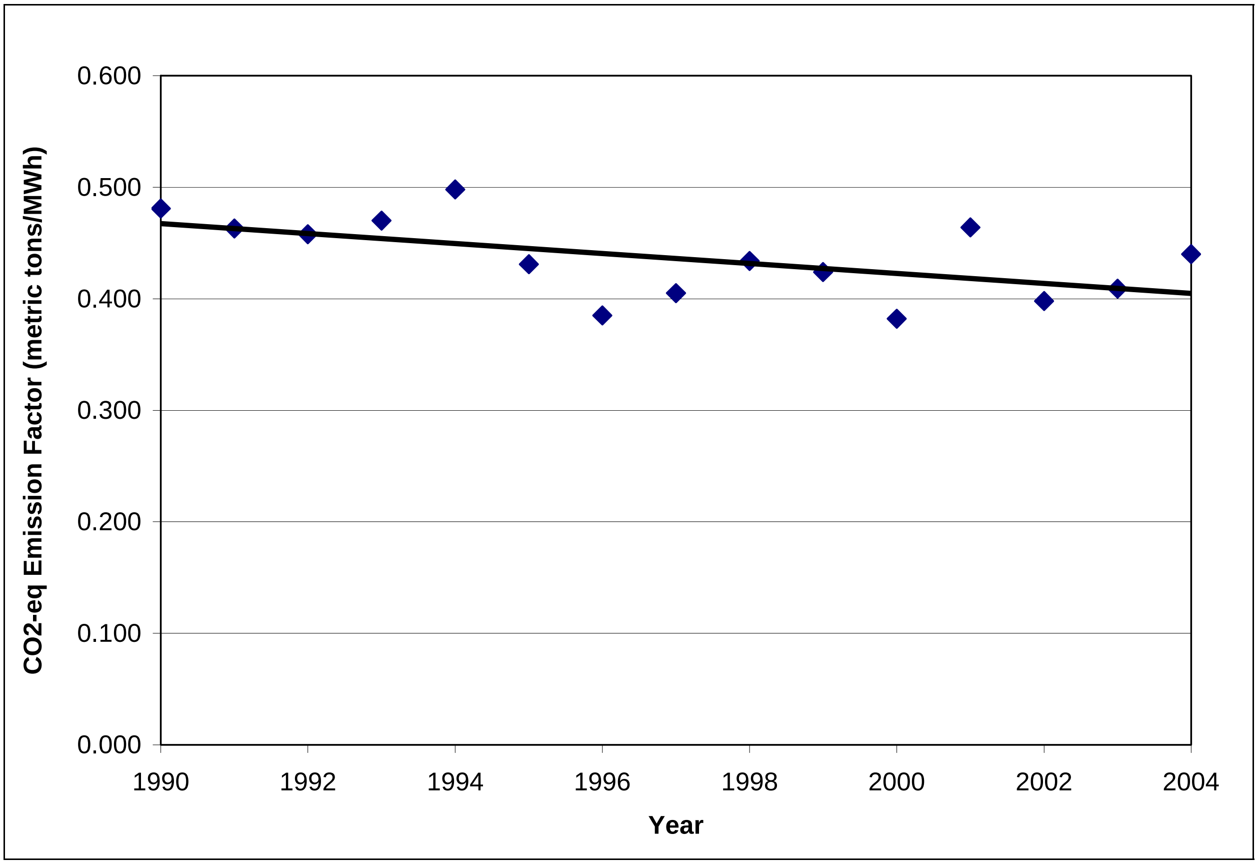
> *New natural gas-fueled electricity generation technologies offer efficiency, environmental, and other benefits to California, specifically by reducing the amount of natural gas used—and with less natural gas burned, fewer greenhouse gas emissions. Older combustion and steam turbines use outdated technology that makes them less fuel- and cost-efficient than newer, cleaner plants.… The 2003 and 2005 IEPRs noted that the state could help reduce natural gas consumption for electric generation by taking steps to retire older, less efficient natural gas power plants and replace or repower them with new, more efficient power plants. (CEC 2007a, p. 184)*

Thus, in the context of the Energy Commission's Integrated Energy Policy Report, the RERC 3&4 project's likely replacement of older existing plant capacity furthers the state's strategy to promote efficiency and reduce fuel use and GHG emissions.

System Averages

Because most power plants are interconnected to a utility grid, and in turn to the Western Electricity Coordinating Council (WECC), it is also important to look at the proposed project in the context of all electricity systems delivering electricity to California consumers. **Air Quality Figure 6** shows the trends in GHG emission rates for each MWh consumed in California. From 1990 to 2004, California electricity became almost 20 percent "cleaner" on a GHG basis. This improvement was due in part to retirements of dirtier, less efficient plants, despite electricity demand growth of almost 20 percent from 1990 to 2004. Note that the trend line, a linear regression of the annual GHG emission rates, is a better representation of the statewide GHG emission rates than the actual number in any one year. GHG emissions and electricity consumption can vary from year to year due to variations in the availability of hydroelectric power, economic activity, and anomalous events such as the energy crisis of 2000-2001 and unusually warm weather conditions in 2004.

AIR QUALITY Figure 6
GHG Emissions per Megawatt-hour Consumed in California



Source: ARB 2008d and CEC 2007b.

The proposed project, if it operates at its maximum permitted level, would have a GHG emission rate (approximately 0.55 mt CO_2-eq/MWh) that is greater than the system wide average (the trend line in 2004 is approximate 0.400 mt CO_2-eq/MWh). However, the project should not result in a net increase in global GHG emissions because it would likely operate to replace energy from existing less efficient peaking power sources in the South Coast Air Basin. However, even considering if the project cannot be directly attributed to replace higher-emitting existing power plant capacity, it would be difficult to conclusively determine whether the project would result in a net increase in GHG emissions, for several reasons. Because of the complex interchange among facilities that make up California's electricity system, it is possible that this project could displace electricity that may have otherwise been generated by more GHG intensive facilities, such as out-of-state coal plants or local old inefficient peaking units. Additionally, facilities of this nature, with quick-start capabilities, are needed to support California's efforts to increase use of renewable resources.

Indeed, the 2007 Integrated Energy Policy Report identifies natural gas generation as a "complementary strategy to meet greenhouse gas emission reductions." It fills the gap that cannot be currently served by renewable generation, provides system stability to integrate new renewable generation, and may ultimately be necessary to displace imported coal generation, which has much higher GHG emissions. As stated in the 2007 IEPR:

> *Growth in natural gas used to generate electricity may exceed even these estimates under certain greenhouse gas reduction measures. For example, scenario analyses calculated that if a $60 per ton price were attached to CO_2 emissions, projected levels of coal-generated electricity in the WECC would decline by about 30 to 40 percent in 2020. As a result, natural gas burned to generate electricity in California would increase by about 20 to 70 percent depending on the amount of preferred resources. …*
>
> *Reducing the amount of coal used to generate electricity with a combination of preferred resources and natural gas and in the context of $60 per ton of carbon charge increases natural gas use in California and throughout the WECC.*
>
> *Natural gas is and will remain the major fuel in California's supply portfolio and must be used prudently as a complementary strategy to reduce greenhouse gas emissions. Not only does the state have a mandate to cut greenhouse gas emissions, it also has a responsibility to provide a reliable and affordable fuel source for home and business use. (CEC 2007a, p. 186)*

Therefore, even though we can identify how many gross GHG emissions are attributable to a project, it is difficult to determine whether this would result in a net increase of these emissions, and, if so, by how much. It would, thus, be speculative to conclude that any given project results in a cumulatively significant adverse impact resulting from greenhouse gas emissions.

Additionally, the quickly evolving GHG regulatory efforts currently being formulated may shortly establish the best *fora* for addressing GHG emissions from power plants rather than attempting to do so on an ad hoc or plant-by-plant basis. The RERC 3&4 project would be operational no sooner than the summer of 2009. ARB is scheduled to have set forth each sector's reduction requirements as of January of 2009, followed by the adoption of specific regulations by January of 2011.

Ultimately, ARB's AB 32 regulations will address both the degree of electricity generation emissions reductions, and the method by which those reductions will be achieved, through the programmatic approach currently under its development. That regulatory approach will presumably address emissions not only from the newer, more efficient, and lower emitting facilities licensed by the Commission, but also the older, higher-emitting facilities not subject to any GHG reduction standard that this agency could impose. This programmatic approach is likely to be more effective in reducing GHG emissions overall from the electricity sector than one that merely relies on displacing out-of-state coal plants ("leakage") or older "dirtier" facilities.

As ARB codifies accurate GHG inventories and methods, it may become apparent that relative contributions to the inventories may not correlate to relative ease and cost-effectiveness of the GHG emission reductions necessary to achieve the 1990 GHG level. Though it has not yet been determined, the electricity sector may have to provide less or more GHG reductions than it would have otherwise been responsible for on a pro-rata basis.

To facilitate ARB's future regulatory regime, staff recommends Condition of Exemption **AQ-SC7**, which requires the project owner to report the quantities of relevant GHGs emitted as a result of electric power production until such time that AB32 is implemented and its reporting requirements are in force. Staff believes that **AQ-SC7**, with the reporting of GHG emissions, would enable the project to be consistent with the policies described above and the regulations that ARB adopts, and provide the information to demonstrate compliance with the EPS. The GHG emissions to be reported in **AQ-SC7**, are carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, HFCs and PFCs emissions that are directly associated with the production and transmission of electric power.

Note that reporting GHG emissions under **AQ-SC7** does not imply that the project, as defined, would comply with the potential reporting and reduction regulations being formulated under AB32. The project may have to provide additional reports and GHG reductions, depending on the reporting requirements of the new regulations expected from ARB.

Conclusions Regarding Greenhouse Gas Emissions

The RERC 3&4 project would only be used when necessary to supply local City of Riverside peak load demands. It would be speculative to conclude that the project would result in a cumulatively significant GHG impact. AB 32 emphasizes that GHG emissions reductions must be "big picture" reductions that do not lead to "leakage" of such reductions to other states or countries. If a gas-fired power plant is not built in California, electricity to serve the load will come from another generating source. That could be renewable generation like wind or solar, but it could also be from higher carbon emitting sources such as out-of-state coal imports or old inefficient peaking units that are a still a significant part of the resource mix that serves California.

Since this peaking power project is permitted for less than a 60 percent annual capacity factor, the project is not subject to the requirements of SB1368 and the Emission Performance Standard.

NOTEWORTHY PUBLIC BENEFITS

No air quality related noteworthy public benefits have been identified.

CONCLUSIONS

Staff has made the following preliminary conclusions for the RERC 3&4 project:

- Staff concludes that with appropriate mitigation the proposed RERC 3&4 project would not result in significant air quality impacts.

- The applicant is proposing to fully mitigate all of the project's new emissions by providing RECLAIM credits for NOx and banked emission reduction credits for PM10 and VOC.
- In order to mitigate potentially significant construction emission impacts, staff recommends Conditions of Exemption **AQ-SC1** through **AQ-SC5** to mitigate the project's construction equipment emissions and fugitive dust emissions to less than significant amounts.
- Staff recommends Condition of Exemption **AQ-SC6** to enhance staff's ability to verify that all permits are properly provided.
- Staff recommends the addition of Condition of Exemption **AQ-SC7** to require greenhouse gas reporting.
- Staff has considered the minority population surrounding the site (see Socioeconomics Figure 1). Since the project's direct air quality impacts have been reduced to less than significant, there is no environmental justice issue for air quality.

PROPOSED CONDITIONS OF EXEMPTION

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 AQ-SC3, AQ-SC4 and AQ-SC5 for the entire project site and linear facility construction. The on-site AQCMM may delegate responsibilities to one or more AQCMM Delegates. The AQCMM and AQCMM Delegates shall have full access to all areas of construction on the project site and linear facilities, and shall have the authority to stop any or all construction activities as warranted by applicable construction mitigation conditions. The AQCMM and AQCMM Delegates may have other responsibilities in addition to those described in this condition. The AQCMM shall not be terminated without written consent of the CPM.

Verification: At least 60 days prior to the start of ground disturbance, the project owner shall submit to the CPM for approval, the name, resume, qualifications, and contact information for the on-site AQCMM and all AQCMM Delegates. The AQCMM and all Delegates must be approved by the CPM before the start of ground disturbance.

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 AQ-SC3, AQ-SC4 and AQ-SC5.

Verification: At least 60 days prior to the start of any ground disturbance, the project owner shall submit the AQCMP to the CPM for approval. The CPM will notify the project owner of any necessary modifications to the plan within 30 days from the date of receipt. The AQCMP must be approved by the CPM before the start of ground disturbance.

AQ-SC3 Construction Fugitive Dust Control: The AQCMM shall submit documentation to the CPM in each Monthly Compliance Report (MCR) that demonstrates compliance with the following mitigation measures for the purposes of preventing all fugitive dust plumes from leaving the project site and linear facility routes. Any deviation from the following mitigation measures shall require prior CPM notification and approval.

A. All unpaved roads and disturbed areas in the project and linear construction sites shall be watered as frequently as necessary to comply with the dust mitigation objectives of AQ-SC4. The frequency of watering may be reduced or eliminated during periods of precipitation.

B. No vehicle shall exceed 10 miles per hour within the construction site.

C. The construction site entrances shall be posted with visible speed limit signs.

D. All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways.

E. Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.

F. All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways.

G. All construction vehicles shall enter the construction site through the treated entrance roadways, unless an alternative route has been submitted to and approved by the CPM.

H. Construction areas adjacent to any paved roadway shall be provided with sandbags or other measures as specified in the Storm Water Pollution Prevention Plan (SWPPP) to prevent run-off to roadways.

I. All paved roads within the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.

J. At least the first 500 feet of any public roadway exiting from the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff from the construction site is visible on the public roadways.

K. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or shall be treated with appropriate dust suppressant compounds.

L. All vehicles that are used to transport solid bulk material on public roadways and that have the potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least two feet of freeboard.

M. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

Verification: The project owner shall include in the MCR (1) a summary of all actions taken to maintain compliance with this condition, (2) copies of any complaints filed with the air district in relation to project construction, and (3) any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC4 Dust Plume Response Requirement: The AQCMM or an AQCMM Delegate shall monitor all construction activities for visible dust plumes. Observations of visible dust plumes that have the potential to be transported (1) off the project site or (2) 200 feet beyond the centerline of the construction of linear facilities or (3) within 100 feet upwind of any regularly occupied structures not owned by the project owner indicate that existing mitigation measures are not resulting in effective mitigation. The AQCMM or Delegate shall implement the following procedures for additional mitigation measures in the event that such visible dust plumes are observed:

Step 1: The AQCMM or Delegate shall direct more intensive application of the existing mitigation methods within 15 minutes of making such a determination.

Step 2: The AQCMM or Delegate shall direct implementation of additional methods of dust suppression if Step 1 specified above fails to result in adequate mitigation within 30 minutes of the original determination.

Step 3: The AQCMM or Delegate shall direct a temporary shutdown of the activity causing the emissions if Step 2 specified above fails to result in effective mitigation within one hour of the original determination. The activity shall not restart until the AQCMM or Delegate is satisfied that appropriate additional mitigation or other site conditions have changed so that visual dust plumes will not result upon restarting the shutdown source. The owner/operator may appeal to the CPM any directive from the AQCMM or Delegate to shut down an activity, provided that the shutdown shall go into effect within one hour of the original determination, unless overruled by the CPM before that time.

Verification: The AQCMP shall include a section detailing how the additional mitigation measures will be accomplished within the time limits specified.

AQ-SC5 Diesel-Fueled Engines Control: The AQCMM shall submit to the CPM, in the MCR, a construction mitigation report that demonstrates compliance with the following mitigation measures for the purposes of controlling diesel construction-related emissions. Any deviation from the following mitigation measures shall require prior CPM notification and approval.

A. All diesel-fueled engines used in the construction of the facility shall be fueled only with ultra-low sulfur diesel, which contains no more than 15 ppm sulfur.

B. All diesel-fueled engines used in the construction of the facility shall have clearly visible tags issued by the on-site AQCMM showing that the engine meets the conditions set forth herein.

C. All construction diesel engines, which have a rating of 50 hp or more, shall meet, at a minimum, the Tier 2 California Emission Standards for Off-Road Compression-Ignition Engines as specified in California Code of Regulations, Title 13, section 2423(b)(1) unless certified by the on-site AQCMM that such 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 50 hp, that engine shall be equipped with a Tier 1 engine. In the event a Tier 1 engine is not available for any off-road engine larger than 50 hp, that engine shall be equipped with a catalyzed diesel particulate filter (soot filter), unless certified by engine manufacturers or the on-site AQCMM that the use of such devices is not practical for specific engine types. For purposes of this condition, the use of such devices is “not practical” if, among other reasons:

   1. There is no available soot filter that has been certified by either the California Air Resources Board or U.S. Environmental Protection Agency for the engine in question; or

   2. The construction equipment is intended to be on-site for ten (10) days or less.

   3. The CPM may grant relief from this requirement if the AQCMM can demonstrate that they have made a good faith effort to comply with this requirement and that compliance is not possible.

D. The use of a soot filter may be terminated immediately if one of the following conditions exists, provided that the CPM is informed within ten (10) working days of the termination:

   1. The use of the soot filter is excessively reducing normal availability of the construction equipment due to increased downtime for maintenance, and/or reduced power output due to an excessive increase in backpressure.

   2. The soot filter is causing or is reasonably expected to cause significant engine damage.

   3. The soot filter is causing or is reasonably expected to cause a significant risk to workers or the public.

4. Any other seriously detrimental cause which has the approval of the CPM prior to the termination being implemented.

E. All heavy earthmoving equipment and heavy duty construction related trucks with engines meeting the requirements of (c) above shall be properly maintained and the engines tuned to the engine manufacturer's specifications.

F. All diesel heavy construction equipment shall not remain running at idle for more than five minutes, to the extent practical.

Verification: The project owner shall include in the MCR (1) a summary of all actions taken to maintain compliance with this condition, (2) copies of all diesel fuel purchase records, (3) a list of all heavy equipment used on site during that month, including the owner of that equipment and a letter from each owner indicating that equipment has been properly maintained, and (4) any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC6 The project owner shall provide the Energy Commission Compliance Project Manager (CPM) copies of all District issued air quality permits, construction and operation permits, for the facility.

The project owner shall submit to the CPM for review and approval any modification proposed by the project owner to any project air permit. The project owner shall submit to the CPM any modification to any permit proposed by the District or U.S. EPA, and any revised permit issued by the District or U.S. EPA, for the project.

Verification: The project owner shall submit any air quality permit and any proposed air permit modification to the CPM within five working days of its submittal either by 1) the project owner to an agency, or 2) receipt of proposed modifications from an agency. The project owner shall submit all modified air permits to the CPM within 15 days of receipt.

AQ-SC7 Until the ARB enacts a program to report and restrict GHG emissions from the electricity sector under the California Global Warming Solutions Act of 2006 (AB32), the project owner shall either participate in a climate action registry approved by the CPM or report on a annual basis to the CPM the quantity of greenhouse gases (GHG) emitted as a direct result of facility electricity production. When ARB's GHG reporting regulations become effective, the project owner shall comply with the requirements of that GHG program, and the reporting requirements of this condition of exemption shall cease, provided that the Energy Commission continues to receive the data required by the ARB program. Until then, the project owner shall do what is described in the following paragraphs.

The project owner shall maintain a record of fuel types and carbon content used on-site for the purpose of power production. These fuels shall include but are not limited to each fuel type burned: (1) in combustion turbines, (2) HRSGs (if applicable) or auxiliary boiler (if applicable), (3) internal combustion engines, (4) flares, and (5) for the purpose of startup, shutdown, operation or emission controls.

The project owner may perform annual source tests of CO_2 and CH_4 emissions from the exhaust stacks while firing the facility's primary fuel, using the following test methods or other test methods as approved by the CPM. The project owner shall produce fuel-based emission factors in units of lbs CO_2 equivalent per MMBtu of fuel burned from the annual source tests. If a secondary fuel is approved for the facility, the project owner may also perform these source tests while firing the secondary fuel.

Pollutant	Test Method
CO_2	EPA Method 3A
CH_4	EPA Method 18 (POC measured as CH_4)

As an alternative to performing annual source tests, the project owner may use the Intergovernmental Panel on Climate Change (IPCC) Methodologies for Estimating Greenhouse Gas Emissions (MEGGE). If MEGGE is chosen, the project owner shall calculate the CO_2, CH_4 and N_2O emissions using the appropriate fuel-based carbon content coefficient (for CO_2) and the appropriate fuel-based emission factors (for CH_4 and N_2O).

The project owner shall convert the N_2O and CH_4 emissions into CO_2 equivalent emissions using the current IPCC Global Warming Potentials (GWP). The project owner shall maintain a record of all SF_6 that is used for replenishing on-site high voltage equipment. At the end of each reporting period, the project owner shall total the mass of SF_6 used and convert that to a CO_2 equivalent emission using the IPCC GWP for SF_6. The project owner shall maintain a record of all PFCs and HFCs that are used for replenishing on-site refrigeration and chillers directly related to electricity production. At the end of each reporting period, the project owner shall total the mass of PFCs and HFCs used and not recycled and convert that to a CO_2 equivalent emission using the IPCC GWP.

On an annual basis, the project owner shall report the CO_2 and CO_2 equivalent emissions from the described emissions of CO_2, N_2O, CH_4, SF_6, PFCs, and HFCs.

Verification: The project annual GHG emissions shall be reported as required by the ARB under the California Global Warming Solutions Act of 2006 (AB32) and, until such requirements are enacted, as a CO_2 equivalent, by the project owner to a climate action registry approved by the Energy Commission, or to the Energy Commission by January 31st for each previous year's GHG emission inventory.

ACRONYMS

AAQS	Ambient Air Quality Standard
AERMOD	ARMS/EPA Regulatory Model
AQCMM	Air Quality Construction Mitigation Manager
AQCMP	Air Quality Construction Mitigation Plan
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
ARM	Annual NOx Ratio Method
ATC	Authority To Construct
ATSDR	Agency for Toxic Substances and Disease Registry
BACT	Best Available Control Technology
bhp	brake horse power
C_2F_6	Hexafluoroethane
CAAQS	California Ambient Air Quality Standard
CCAR	California Climate Action Registry
CEC	California Energy Commission (or Energy Commission)
CEM	Continuous Emission Monitor
CEQA	California Environmental Quality Act
CF_4	Tetrafluoromethane
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CPM	(CEC) Compliance Project Manager
CTG	Combustion Turbine Generator
DAS	Data Acquisition System
DIS	Draft Initial Study (this document)
EIR	Environmental Impact Reports
EPA	Environmental Protection Agency
EPS	Emission Performance Standard
ERC	Emission Reduction Credit
GHG	Greenhouse Gas
gr	Grains (1 gr $\cong$ 0.0648 grams, 7000 gr = 1 pound)
GWP	Global Warming Potentials
H_2S	Hydrogen Sulfide
HCFC	Hydrochlorofluorocarbons
HFCs	Hydrofluorocarbons
HRSG	Heat Recovery Steam Generator
HP	Horse power
HSC	Health and Safety Code
IEPR	Integrated Energy Policy Report
IPCC	Intergovernmental Panel on Climate Change
km	Kilometer
Lbs/day	Pound per day
LORS	Laws, Ordinances, Regulations, and Standards
MEGGE	Methodologies for Estimating Greenhouse Gas Emissions
$\mu g/m^3$	Microgram per cubic meter
mg/m^3	Milligram per cubic meter

MMBtu	Million British thermal units
mt	Metric tonne
MW	Megawatts (1,000,000 Watts)
MWh	Megawatt-hour
N_2	Nitrogen
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standard
NH_3	Ammonia
NO	Nitrogen Oxide
NO_2	Nitrogen Dioxide
NOx	Oxides of Nitrogen *or* Nitrogen Oxides
NSPS	New Source Performance Standard
NSR	New Source Review
O_2	Oxygen
O_3	Ozone
PFCs	Perfluorocarbons
PM10	Particulate Matter less than 10 microns in diameter
PM2.5	Particulate Matter less than 2.5 microns in diameter
POC	Persistent Organic Compounds
ppm	Parts Per Million
ppmv	Parts Per Million by Volume
ppmvd	Parts Per Million by Volume, Dry
PSD	Prevention of Significant Deterioration
PTO	Permit To Operate
RERC	Riverside Energy Resource Center
RERC3&4	Riverside Energy Resource Center Units 3&4
ROG	Reactive Organic Gases
RPU	Riverside Public Utilities
SB	State Bill
SCAQMD	South Coast Air Quality Management District
scf	Standard Cubic Feet
SCR	Selective Catalytic Reduction
SDAPCD	San Diego Air Pollution Control District
SF_6	Sulfur Hexafluoride
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SO_3	Sulfate
SoCAB	South Coast Air Basin
SOx	Oxides of Sulfur
SPPE	Small Power Plant Exemption
SWPPP	Storm Water Pollution Prevention Plan
TDS	Total Dissolved Solids
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
WECC	Western Electricity Coordinating Council
ZLD	Zero Liquid Discharge

REFERENCES

ARB 2006a (California Air Resources Board). California Ambient Air Quality Data 1980-2005 on CD ROM. December, 2006.

ARB. 2006b. AB 32 Fact Sheets, California Global Warming Solutions Act of 2006 and Timeline. www.arb.ca.gov/cc/cc.htm. September, 2006.

ARB 2008a (California Air Resources Board). California Ambient Air Quality Standards available on CARB Website. http://www.arb.ca.gov/aqs/aqs.htm.. Accessed May, 2008.

ARB 2008b (California Air Resources Board). Air Designation Maps available on CARB Website. http://www.arb.ca.gov/desig/adm/adm.htm. Accessed May, 2008.

ARB 2008c (California Air Resources Board). California Ambient Air Quality Data Statistics available on CARB Website. http://www.arb.ca.gov/adam/welcome.html. Accessed May, 2008.

ARB 2008d. California Air Resource Board Greenhouse Gas Inventory Data - 1990 to 2004, 1990-2004 inventory by IPCC category, http://www.arb.ca.gov/cc/inventory/data/data.htm

ATSDR 2008 (Agency for Toxic Substances and Disease Registry). Medical Management Guidelines for Ammonia (NH3). http://www.atsdr.cdc.gov/MHMI/mmg126.html. Accessed August 2008

CalEPA 2006 (California Environmental Protection Agency). Climate Action Team Report to Governor Schwarzenegger and the Legislature. March, 2006.

CCAR 2005 (California Climate Action Registry). California Climate Action Registry's Appendix to the General Reporting Protocol:Power Utility Reporting Protocol. Version 1.0. April 2005.

CEC 1998 (California Energy Commission). 1997 Global Climate Change, Greenhouse Gas Emissions Reduction Strategies for California, Volume 2, Staff Report. 1998.

CEC 2003. 2003 Integrated Energy Policy Report. December 2003.

CEC 2004. Final Initial Study, Air Quality, Riverside Energy Resource Center (01-SPPE-1). August 2008.

CEC 2007a (California Energy Commission). 2007 Integrated Energy Policy Report – Scenario Analysis of California's Electricity System. http://www.energy.ca.gov/2007_energypolicy/documents/index.html. 2007.

CEC 2007b. California Energy Commission, California Energy Demand 2008-2018 Staff Revised Forecast, November 2007, http://www.energy.ca.gov/2007publications/CEC-200-2007-015/CEC-200-2007-015-SF2.PDF

RCEC 2008a – CEC/M. Jones (tn45678) Application for Certification of an SPPE dated 3/19/08. Submitted to Dockets 3/19/08.

RERC 2008e – PE/M. Tatterson (tn46637) Data Request Responses 1-71. Submitted to Dockets 6/6/08

RERC 2008g – PE/M. Tatterson (tn46637) Updated Responses and Addl Information for the 6/26/08 Data Response and Issue Resolution Workshop. Submitted to Dockets 7/3/08

SCAQMD 2007. Final 2007 Air Quality Management Plan. http://www.aqmd.gov/aqmp/07aqmp/index.html. June 2007.

SCAQMD 2008a. Air Quality Data Tables. http://www.aqmd.gov/smog/historicaldata.htm. Accessed July 2008.

SCAQMD 2008b. Final Localized Significance Threshold Methodology. http://www.aqmd.gov/ceqa/handbook/LST/Method_final.pdf. Revised July 2008.

Tatterson 2008. E-mail correspondence between Mike Tatterson, Power Engineering, and William Walters, Aspen Environmental Group, et.al. RERC 3&4 – ERC Purchase Information. August 11, 2008.

U.S. EPA 2008 (United States Environmental Protection Agency). Air Quality Maps. http://www.epa.gov/region09/air/maps/maps_top.html. Accessed August 2008.

WC 2008 (Weather Channel). Monthly averages for Riverside, California. Website: http://www.weather.com. Accessed May 2008.

BIOLOGICAL RESOURCES

Testimony of Brian McCollough

INTRODUCTION

This section of the Initial Study analyzes the potential impacts to biological resources from the construction and operation of the proposed Riverside Energy Resource Center Units 3 & 4 (RERC Units 3 & 4) located in Riverside County, California. The focus of this section is potential impacts to state and federally listed species, species of special concern, riparian areas, wetlands, and other areas of critical biological concern. This document presents information regarding the affected biotic community, the potential environmental impacts associated with the construction and operation of the proposed project, and where necessary, specifies mitigation measures to reduce potential impacts to less than significant levels.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

The applicant will need to abide by the following biological resources laws, ordinances, regulations, and standards during project construction and operation.

FEDERAL

Endangered Species Act

Title 16, United States Code, section 1531 et seq., and Title 50, Code of Federal Regulations, part 17.1 et seq., designates and provides for protection of threatened and endangered plant and animal species, and their critical habitat.

Migratory Bird Treaty Act

Title 16, United States Code, sections 703-712, prohibits the take of migratory birds, including their eggs.

Clean Water Act of 1977

Title 33, United States Code, section 404 et seq., prohibits the discharge of dredged or fill material into the waters of the United States without a permit.

Bald and Golden Eagle Protection Act

Title 16, United States Code, section 668, protects bald and golden eagles from possession, selling, purchase, barter, offers to sell, purchase or barter, transport, export or import, at any time or in any manner, alive or dead, or any part, nest, or egg.

STATE

California Endangered Species Act

Fish and Game Code, sections 2050 through 2098, protects California's rare, threatened, and endangered species. California Code of Regulations, Title 14, sections 670.2 and 670.5, list California species designated as rare, threatened, or endangered.

Migratory Bird Protection

Fish and Game Code section 3513 protects California's migratory birds by making it unlawful to take or possess any migratory non-game bird as designated in the Migratory Bird Treaty Act or any part of such migratory non-game bird.

Fully Protected Species

Fish and Game Code sections 3511, 4700, 5050, and 5515 prohibits take of animals, or their habitat, that are classified as "Fully Protected" in California.

Significant Natural Areas

Fish and Game Code section 1930 et seq. designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitat.

Native Plant Protection Act of 1977

Fish and Game Code section 1900 et seq. designates state rare, threatened, and endangered plants.

Streambed Alteration Agreement:

Fish and Game Code section 1600, evaluates project impacts to waterways, including impacts to vegetation and wildlife from sediment, diversions, and other disturbances.

Nest or Eggs

Fish and Game Code section 3503 protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird.

Birds of Prey or Eggs

Fish and Game Code section 3503.5 protects California's birds of prey and their eggs by making it unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird.

LOCAL

County of Riverside General Plan

The Multipurpose Open Space Element provides policies to preserve open space and protect natural resources that are sensitive, rare, threatened, or endangered. Also addressed are preserving natural resources and agriculture, managing mineral resources, preserving and enhancing cultural resources, and providing recreational opportunities for the citizens of Riverside County (Riverside County General Plan, Open Space and Conservation Element Chapter 5).

County of Riverside Multiple Species Habitat Conservation Plan

The County of Riverside adopted the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) in June 2003. The MSHCP allows for habitat loss from development within its boundaries when developers pay a mitigation fee to establish and manage regional habitat conservation areas. The U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) issue their permits for regional development impacts to federally- and state-listed species instead of on a project by project basis, reducing delays in development and resulting in a network of conservation areas to benefit special-status species. The Western Riverside Regional Conservation Authority oversees the implementation of the MSHCP.

SETTING

The proposed RERC Units 3 & 4 would be located at the existing RERC site along the Santa Ana River adjacent to the existing Riverside Regional Water Quality Control Plant (RRWQCP) in western Riverside County. The area has a Mediterranean climate, with hot, dry summers and cooler, wetter winters. Most of the precipitation falls between November and March, and ranges from an average of 12 inches a year in the coastal plain to 40 inches in the San Bernardino Mountains (USGS 2008). Historically, the area was dominated by coastal sage scrub and chaparral plant communities, with the Santa Ana River meandering through with sandy streambeds and associated willows, cottonwoods, and live oaks. As Riverside County has urbanized, much of the native habitat has been lost to development. Conversion of the chaparral to urban development, industry, grazed land, and agricultural crops has fragmented much of the historical habitat and eliminated many native species from much of their historical ranges (Riverside MSHCP 2003).

Flood control projects on the Santa Ana River have modified the river through impoundment and channelization, altering the natural hydrology and sediment flow in the river. Near the proposed project, the riparian corridor along the river has been restored at the Hidden Valley Wildlife Area to the north and west of the project and the Santa Ana River Wetlands Mitigation Bank to the north and east. The areas receive water from the RRWQCP year-round, and so the restored wetlands and the riparian corridor have become well established. These areas provide habitat for sensitive species such as the Santa Ana sucker (*Catostomus santaanae*), least Bell's vireo (*Vireo bellii pusilus*), and the southwestern willow flycatcher (*Empidonax traillii extimus*). A complete list of the sensitive species that are known to occur near the proposed RERC Units 3 & 4 project is contained in **Biological Resources Table 1**.

POWER PLANT FACILITY AND LAYDOWN AREA

The proposed RERC Units 3 & 4 would be constructed on 2.2 acres of the existing 16-acre RERC site. The RERC project area was excavated for fill material when the Tequesquite Landfill was built, and up to 16 feet of material was removed. As a result of the excavation, the site has steep walled berms on the south and east sides. The site is flat with a gradual slope towards the RRWQCP to the west and the Santa Ana River to the north. Large boulders that became exposed during excavation were left in several piles on the site prior to the construction of the RERC Units 1 & 2 project. The boulder piles provided habitat for a variety of wildlife species including burrowing owl (*Athene cunicularia*), Pacific chorus frog (*Pseudacris regilla*), desert cottontail rabbits (*Sylvilagus audubon*i*),* and side-blotched lizards *(Uta stansburiana*). The boulders were removed and an on-site burrowing owl mitigation area was created along the slopes in the northern and eastern portions of the RERC. The burrowing owl mitigation included the installation of artificial burrows and revegetation with a variety of native plant species in order to encourage burrowing owls and their prey to use the mitigation area (RERC Units 3 & 4 2008a).

The remainder of the RERC project area includes the power plant, associated structures, equipment storage areas, paved access roads, landscaped areas, parking lots, and a ruderal, north-facing hillside overlooking the Santa Ana River. Southern cottonwood willow riparian forest occurs 330 feet north of the project, and is dominated by Fremont's cottonwood (*Populus fremontii*) and arroyo willow (*Salix lasiolepis*). This riparian forest supports suitable foraging and nesting habitat for sensitive bird species including least Bell's vireo, southwest willow flycatcher, and western yellow-billed cuckoo. For a complete list of observed species, see the application for a Small Power Plant Exemption (RERC Units 3 & 4 2008a, Appendix 6.3-C).

BIOLOGICAL RESOURCES Table 1
Sensitive Species Known to Occur in the Project Vicinity

Common Name	Scientific Name	STATUS*
PLANTS		
San Diego ambrosia	*Ambrosia pumila*	FE/--/List 1B
Parry's sunflower	*Chorizanthe parryi var. parryi*	--/--/List 3
Santa Ana River woolly-star	*Eriastrum densifolium ssp. sanctorum*	FE/SE/List 1B
rayless ragwort	*Senecio aphanactis*	--/--/List 2
Brand's phacelia	*Phacelia stellaris*	--/--/List 1B
FISH		
arroyo chub	*Gila orcutti*	--/CSC
Santa Ana sucker	*Catostomus santaanae*	FT/CSC
BIRDS		
western burrowing owl	*Athene cunicularia hypugea*	--/CSC
western yellow billed cuckoo	*Coccyzus americanus occidentalis*	FC/SE
southwestern willow flycatcher	*Empidonax traillii extimus*	--/SE
coastal California gnatcatcher	*Polioptila californica californica*	FT/CSC
least Bell's vireo	*Vireo bellii pusilus*	FSC/CSC
white-tailed kite	*Elanus leucurus*	--/CSC, FP
loggerhead shrike	*Lanius ludovicianus*	--/CSC
turkey vulture	*Cathartes aura*	--/--/MSHCP
REPTILES		
San Diego horned lizard	*Phrynosoma coronatum blainvillei*	--/CSC
northern red-diamond rattlesnake	*Crotalus ruber ruber*	--/CSC
MAMMALS		
western mastiff bat	*Eumops perotis californicus*	--/CSC
western yellow bat	*Lasiurus xanthinus*	--/CSC
San Diego black-tailed jackrabbit	*Lepus californicus bennettii*	--/CSC
Stephen's kangaroo rat	*Dipodomys stephensi*	FE/SE
northwestern San Diego pocket mouse	*Chaetodipus fallax fallax*	FSC/--

* Status Legend (Federal/State/CNPS lists, CNPS list is for plants only):
FE = Federally-listed Endangered; **FT** = Federally-listed Threatened; **FSC** = Federal Species of Concern; **FC** = Candidate Species for Listing; **SE** = State-listed Endangered; **CSC** = California Species of Special Concern; **FP** = State Fully Protected; **List 1B** = CNPS rare or endangered in California and elsewhere; **List 2** = Rare or Endangered in California, more common elsewhere; **List 3** = Need more Information; -- = not listed in that category; **MSHCP** = species only covered by the MSHCP (all other species on this table are covered by the MSHCP as well)

Sources: California Natural Diversity Database (CDFG 2008) and RERC Units 3 & 4 2008a

LINEAR FACILITIES

All linear facilities will be located on the existing RERC site.

<u>Natural Gas Pipeline</u>

Natural gas will be supplied to RERC Units 3 & 4 through the existing Southern California Gas metering station on the site property.

Water Pipeline

Reclaimed water for power plant cooling and make up process water would be supplied from the RRWQCP adjacent to the RERC. Landscaping would also be watered using reclaimed water. The proposed RERC Units 3 & 4 is designed to use the same Zero Liquid Discharge (ZLD) process as RERC Units 1 & 2 to recycle process wastewater, so no pipeline to the waste water treatment plant is needed.

The City of Riverside will supply potable water for sanitary use from the City's general water supply using the infrastructure developed to support RERC Units 1 & 2, with a separate connection to supply fire suppression water to the plant.

Electric Transmission Line

The RERC Units 3 & 4 project will connect to the existing RERC switchyard, which is being expanded by two bays to accommodate the additional generators. No new transmission facilities will be required by the RERC Units 3 & 4 project (RERC Units 3 & 4 2008a).

IMPACTS

The following Environmental Checklist identifies potential impacts to biological resources. Following the table is a discussion of the potential impacts and proposed mitigation measures as necessary

.ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
BIOLOGICAL RESOURCES -- Would the project:				
A. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
B. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?				X
C. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
D. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?		X		
E. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
F. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?		X		

Staff's Environmental Checklist responses are discussed below:

A. Effect on Sensitive Species: Less than Significant With Mitigation Incorporated

Burrowing owls were observed on the RERC property prior to the development of Units 1 & 2, resulting in the creation of the on-site burrowing owl mitigation area. This mitigation included the installation of six artificial burrows and revegetation with native plant species. Burrowing owls have been observed foraging throughout the habitat and temporarily residing in the artificial burrows (RERC Units 3 & 4 2008a).

Noise levels generated from construction equipment could impact nesting avian species within the RERC site. To mitigate this potential impact, the applicant agrees that a qualified biologist will monitor the RERC site - including the burrowing owl mitigation area - on a weekly basis during the early portion of the nesting season (March 1 through April 15) and every two weeks during the latter portion of the nesting season (April 16 through June 30) to determine the status of nesting avian species at the site. Should an active nest be detected, the nest will be monitored daily whenever construction activities are within 50 feet of the nest until the biologist determines that the young have fledged and successfully dispersed from the area. During this monitoring period, the biologist will retain the authority to divert construction equipment exceeding 60 dB(A) to areas outside of a 50-foot buffer of the active nest if it is the determination the biologist determines that the construction noise or activities will cause the nest to fail (RERC Units 3 & 4 2008b).

Although the proposed site is degraded from its natural state, it still serves as upland habitat for species such as the burrowing owl, and potentially as foraging habitat by other raptors such as turkey vulture, white-tailed kite, and loggerhead shrike. The project is also adjacent to riparian and coastal sage scrub habitat that is used as nesting and foraging habitat by several listed species. To mitigate for 12 acres of habitat loss when the RERC was constructed, the applicant adhered to the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) and paid a per acre fee (County Ordinance 810.2). The total cost for habitat compensation mitigation was $67,440. As the habitat loss impact for development of the RERC project site has already been compensated for and mitigated through participation in the MSHCP, the construction of the new RERC Units 3 & 4 on the project site will result in no additional MSHCP fee (RERC Units 3 & 4 2008b).

The USFWS also communicated to Energy Commission staff that least Bell's vireos are known to be nesting in the riparian corridor adjacent to the site. USFWS staff expressed concern that loud construction noise and activities could affect nesting success. During the nesting season, the USFWS requires a 500-foot setback from construction activity to the riparian corridor (USFWS pers. com. 2008).

The project site is approximately 600 feet from the recreation trail, and the recreation trail is closer to the project site than the riparian area. The existing ambient noise measured at the recreation trail north of the site and adjacent to the riparian corridor is 46 dB(A). Modeled cumulative construction noise increases to 51 dB(A) at the recreation trail (RERC Units 3 & 4 2008a). Studies have shown that animal behavior can change as a result of exposure to noise. The noise levels that can result in behavior changes start at a range from 60 dB(A) to 85 dB(A) (Knight and Gutzwiler 1995; Sarigul-Klijn 1997), depending on the study and the species. Based on the modeled levels (51 dB(A)) provided by the applicant and staff's independent analysis, noise should not result in a significant impact to nesting least Bell's vireo, as the cumulative noise level would be below the levels research has shown to affect birds. Neither construction nor operation noise at the modeled levels would have a significant impact on least Bell's vireo using the riparian corridor.

B. Effect on Riparian Habitat or other Sensitive Natural Community: No Impact

There are no sensitive natural communities or riparian habitat on the proposed project site that could be impacted from construction activities. The riparian corridor along the Santa Ana River north of the project site would be avoided by the proposed project as long as construction activities maintain a setback from the riparian corridor and wetlands along the river. Since the project is designed as a zero liquid discharge (ZLD) facility there would be no off-site discharges from the project.

The Santa Ana River corridor contains biological resources, such as the Santa Ana sucker (*Catostomus santaanae*), that are sensitive to water quality. Storm water runoff from the RERC site currently flows to a sediment control basin, and then to the neighboring Riverside Regional Water Quality Control Plant (RRWQCP) if the basin reaches capacity. There would be no impact on the Santa Ana River riparian corridor or other sensitive community from either construction or operation of the proposed RERC Units 3 & 4. For more information on the storm water basin capacity and design, see the **Water Resources** section of this Initial Study.

C. Effect on Wetlands: No Impact

There are no wetlands on the project site that would be impacted from construction of the RERC Units 3 & 4. The wetlands along the Santa Ana River would be avoided by the proposed project and since the project is designed as a ZLD facility there will be no wastewater discharges from the project. Storm water would flow to the RRWQCP if it overtops the sediment control basin and Best Management Practices (BMPs) will be in place to prevent run-off to the Santa Ana River (see **Water Resources Section**). These BMPs include erosion and sediment control measures such as use of geosynthetic and matting materials, and use of silt fencing and sandbag de-silting facilities around soil stockpiles. No wetlands would be crossed or filled by the proposed project linear facilities.

D. Interference with Wildlife Movement: Less than Significant With Mitigation

Without the incorporation of mitigation measures, the proposed RERC could interfere with the movement of resident and migratory wildlife, and could impede the use of the riparian corridor as a wildlife nursery site. With the incorporation of applicant proposed mitigation measures the RERC would have a less than significant impact.

The artificial burrows constructed for burrowing owls will be avoided with a 30-foot buffer of orange construction fencing (with the exception of a 28-foot buffer for the construction of the water laboratory) and a biological monitor will be present during construction of the pad, laboratory, and rack at the storage shed, as well as any trenching and grading activities located within 30 feet of the 30-foot buffer. A biological monitor will ensure that burrowing owls inhabiting the burrowing owl mitigation area will not be impacted by the construction activities. Should the biological monitor determine that the construction activities pose a threat to burrowing owls inhabiting the mitigation area, the monitor should retain the power to temporarily halt or divert construction activities until it has been determined that the potential for impact has passed (RERC Units 3 & 4 2008b).

The Santa Ana sucker, which is known from the Santa Ana River adjacent to the proposed site, would not be impacted by the construction or operation of the RERC. Since the RERC is designed as a ZLD facility and is using reclaimed water for cooling, no intake from or discharge to the Santa Ana River will occur. BMPs will be in place to avoid any site runoff to the Santa Ana River during construction.

There are known nesting least Bell's vireos pairs adjacent to the site that could be impacted by construction noise, although the nesting area would not be impacted directly by construction or operation. For a discussion on potential construction noise impacts, see Section 'a' above. With a 500-foot setback from the riparian corridor, potential impacts to nesting least Bell's vireo would be less than significant.

E. Conflict with Local Policies or Ordinances: No Impact

The construction of the RERC Units 1 & 2 project required participation in the MSHCP for habitat impacts resulting from the development of the project site, including payment of a development fee. Since the RERC project site is already developed, the RERC Units 3 & 4 project will not be required to provide additional compensation for loss of habitat. Staff concludes that the proposed project would not conflict with any local biological resources policies or ordinances.

F. Conflict with Adopted Habitat Conservation Plans: Less than Significant With Mitigation Incorporated

The County of Riverside has adopted a MSHCP that includes the RERC site within the boundaries of the Norco/Riverside Area Plan, Sub Unit Santa Ana River South. The City of Riverside has paid into the MSHCP fund for the permanent disturbance of 12 acres of scrub habitat at the site for the RERC Units 1 & 2 project. The per-acre fee the city paid is intended to conserve and manage habitat on a regional basis that meets the Plan criteria. The fees are collected and used by the Riverside Conservation Authority.

The applicant has identified other incidental take minimization measures and BMPs that will be implemented including the following:

- Perform initial grading activities July 1 through the end of February, which will be outside of the avian nesting season.
- Implement environmental awareness training of all construction personnel to recognize sensitive habitat areas and sensitive species. The training would also include information on the exclusion of the riparian corridor from construction impacts.
- Implement BMPs so site runoff will not contaminate the nearby Santa Ana River or the riparian corridor.
- Implement species specific avoidance and take minimization measures if a sensitive species is found on site in preconstruction surveys that was not previously encountered. Measures may include relocation of the animal as advised by CDFG and the U.S. Fish and Wildlife Service.

Adopting the above impact avoidance and take minimization measures would reduce potential impacts to sensitive species to less than significant levels.

CUMULATIVE IMPACTS

Cumulative impacts result from the incremental impacts of an action added to other past, present, and reasonably foreseeable future action, regardless of who is responsible for such actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

The RERC Units 3 & 4 project is being proposed in an existing power plant site that is already disturbed. Loss of habitat is a cumulative impact concern in Riverside County that is being addressed by a regional MSHCP so habitat may be conserved in larger contiguous blocks and targeted areas that benefit the most species. The RERC Units 1 & 2 project compensated according to the MSHCP for the habitat loss of the project site. The RERC Units 3 & 4 project will not result in additional habitat loss, so there is no contribution to any cumulative habitat loss impact.

CONCLUSION

The construction of the RERC Units 3 & 4 with the implementation of biological resources impact avoidance and take minimization measures would result in less than significant impacts to biological resources.

REFERENCES

CDFG (California Department of Fish and Game). 1995. Staff Report on Burrowing Owl Mitigation. 9 pp.

CDFG (California Department of Fish and Game). 2008. California Natural Diversity Data Base RAREFIND data base search results for Riverside West and 8 surrounding USGS 7.5-minute quadrangles. CNDDB February 2008 government edition.

California Energy Commission. 2004. Initial Study for the Riverside Energy Center Units 1 & 2. June 30, 2004.

Knight, Richard L. and Kevin J. Gutzwiller editors. 1995. Wildlife and Recreationists Coexistence Through Management and Research. Chapter 8 Responses of Wildlife to Noise by Ann E. Bowles. Island Press, Covelo, California. Pp. 108-157.

RERC Units 3 & 4 (Riverside Energy Resource Center). 2008a. Application for Small Power Plant Exemption. Submitted to the California Energy Commission on April 26, 2008.

RERC Units 3 & 4 (Riverside Energy Resource Center). 2008b. Applicant's Data Responses 1 - 71. Submitted to the California Energy Commission on June 10, 2008.

Riverside County. 2001. Ordinance No. 810.2 of the County of Riverside amending Ordinance No. 810 to establish the Western Riverside County Multiple Species Habitat Conservation Plan Mitigation. Adopted March 13, 2001 and amended July 22, 2003.

Riverside County. 2003. General Plan. Available at http://www.rctlma.org/genplan/content/gp.aspx. Adopted October 7, 2003.

Riverside County. 2003. Western Riverside County Multiple Species Habitat Conservation Plan. Available at http://www.rctlma.org/epd/intro_mshcp.html. Adopted June 17, 2003.

Sarigul-Klijn, Nesrin. 1997. Final Report Environmental Effects of Transportation Noise-A Case Study: Noise Criteria for the Protection of Endangered Passerine Birds. TNCC Technical Report 97001. Prepared for CALTRANS Environmental Engineering.

U.S. Fish and Wildlife Service. 2008. Personal Communication by telephone between Brian McCollough and Eric Porter. July 8, 2008.

USGS (U.S. Geological Survey). 2007. National Water Quality Assessment Program – Santa Ana Basin. http://water.wr.usgs.gov/sana_nawqa/env_set.html.

CULTURAL RESOURCES

Testimony of Beverly E. Bastian

INTRODUCTION

Cultural resources, as defined in state law, include buildings, sites, structures, objects, and historic districts. The purposes of this cultural resources analysis are to identify and evaluate all potential impacts of the proposed Riverside Energy Resource Center (RERC 3 & 4) project to all significant cultural resources, and to craft mitigation measures (conditions of exemption) that would reduce any unavoidable impacts to significant cultural resources to a less than significant level. Under the term “cultural resources,” the California Energy Commission (Energy Commission) includes historic/prehistoric archaeological deposits, the built environment, and ethnic heritage properties.

This cultural resources analysis includes:

- a brief historical overview of the project area;
- an inventory of cultural resources which could be affected by the proposed project;
- a determination of the significance, using California Environmental Quality Act (CEQA) criteria, of affected cultural resources;
- an evaluation of the project’s potential impacts to significant cultural resources; and
- recommendations of specific mitigation measures (conditions of exemption) for significant and unavoidable impacts to known, if any, and to not-yet-discovered significant cultural resources.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following laws, ordinances, regulations, standards, and policies (LORS) have been identified by Energy Commission staff (staff) as relevant to assessing the significance of the impacts to cultural resources of the proposed RERC 3 & 4. This project has no federal involvement, so only compliance with state and local LORS, particularly the California Environmental Quality Act (CEQA), is necessary.

STATE

- Public Resources Code, section 5024.1 establishes the California Register of Historical Resources (CRHR) and the criteria for eligibility to the CRHR. It also defines eligible resources.
- Public Resources Code, section 5097.5 defines any unauthorized removal or destruction of historic resources on sites located on public land as a misdemeanor.
- Public Resources Code, section 5097.99 prohibits obtaining or possessing Native American artifacts or human remains taken from a grave or cairn and defines as a felony the possession of such artifacts with the intent to sell or vandalize them.

- Public Resources Code, section 5097.991 states that it is the policy of the state that Native American remains and associated grave artifacts be repatriated.
- Public Resources Code, section 5097.98 sets procedures for notification if Native American artifacts or remains are discovered. This requires the landowner to rebury Native American remains elsewhere on the property if other disposition cannot be negotiated.
- Public Resources Code, section 21083.2 (CEQA) states that the lead agency determines whether a project may have a significant effect on “unique” archaeological resources; if so, an environmental impact report shall address these resources. The criteria for the identification of unique archaeological resources are set forth in this section, which directs that an environmental impact report shall not address nonunique archaeological resources. If a potential for damage to unique archaeological resources can be demonstrated, the lead agency may require reasonable steps to preserve the resource in place. Otherwise, the project applicant is required to fund mitigation measures to the extent prescribed in this section, which discusses excavation as mitigation, limits the applicant’s cost of mitigation, sets time frames for excavation, and defines “unique and non-unique archaeological resources.” This section also allows a lead agency to make provisions for archaeological resources unexpectedly encountered during construction, which may require the project applicant to fund mitigation and delay construction in the area of the find.
- Public Resources Code, section 21084.1 (CEQA) indicates that a project may have a significant effect on the environment if it causes a substantial adverse change in the significance of a historical resource. The section defines “historical resource.” A lead agency may determine whether a resource is a historical resource for the purposes of this section even if it is not listed on any register or included in any qualifying survey.
- Government Code, section 37361 (b) allows the legislative body of a city to make special provisions for cultural resources identified as having a special character or special historical or aesthetic interest or value.
- Title 14, California Code of Regulations, section 4852 defines the term "cultural resource" to include buildings, sites, structures, objects, and historic districts. It establishes four criteria for significance and defines integrity.
- Title 14, California Code of Regulations, section 15064.5 (CEQA Guidelines) defines the term “historical resources,” explains when a project may have a significant effect on historical resources, describes CEQA’s applicability to archaeological sites, and specifies the relationship between “historical resources” and “unique archaeological resources.” Subsection (d) allows the project applicant to develop an agreement with Native Americans on a plan for the disposition of remains from known Native American burials impacted by the project. Subsection (e) requires the landowner to rebury Native American remains elsewhere on the property if other disposition cannot be negotiated within 24 hours of accidental discovery and required construction stoppage. Subsection (f) requires that the lead agency make provisions for historical or unique archaeological resources accidentally discovered during construction.

- Title 14, California Code of Regulations, section 15126.4(b) (CEQA Guidelines) describes options for the lead agency and for the project applicant to arrive at appropriate, reasonable, enforceable mitigation measures for minimizing significant adverse impacts from a project. It prescribes maintenance, repair, stabilization, restoration, conservation, or reconstruction as mitigation of a project's impact on a historic building or structure. It discusses documentation as a mitigation measure for a historic building or structure and discusses mitigation through avoidance of damaging effects on any historical resource of an archaeological nature, preferably by preservation in place, or by data recovery through excavation if avoidance or preservation in place are not feasible. Data recovery must be conducted in accordance with an adopted data recovery plan.
- California Health and Safety Code, section 7050.5 makes it a misdemeanor to disturb or remove human remains found outside a cemetery. This code also requires a project owner to halt construction if human remains are discovered and to contact the county coroner.

LOCAL

Riverside County Ordinance 578.4 declares that, as a matter of public policy, the recognition, protection, preservation, enhancement, perpetuation and use of sites and structures having historic significance within the County of Riverside are necessary and required in the interest of the health, safety, prosperity, and general welfare of the public.

Riverside County General Plan Policy OS 19.2 requires the review of all proposed development for the possibility of archeological sensitivity.

Riverside County General Plan Policy OS 19.3 requires the employment of procedures to protect the confidentiality and prevent inappropriate public exposure of sensitive archaeological resources when soliciting the assistance of public and volunteer organizations.

Riverside County General Plan Policy OS 19.4 requires a Native American Statement as part of the environmental review process on development projects with identified cultural resources.

Riverside County General Plan Policy OS 19.5 requires the transmission of significant development proposals to the History Division of the Riverside County Regional Park and Open-Space District for evaluation in relation to the destruction/preservation of potential historic sites. Prior to the approval of any development proposal, feasible mitigation shall be incorporated into the design of the project and its conditions of approval.

Riverside County General Plan Policy OS 19.6 enforces the California State Historic Building Code so that historic buildings can be preserved and used without posing a hazard to public safety.

Riverside County General Plan Policy OS 19.7 allocates resources and/or tax credits, when possible, to prioritize the retrofit of county historic structures which are irreplaceable.

Riverside County Environmental Reports Packet provides standards for the preparation of archaeological or biological reports for privately initiated development proposals, including county review of consultant qualifications, a Memorandum of Understanding between the consultant and the county, notice to the county of the preparation of an archaeological report, and use by the consultant of a standard scope of work, a standard report outline, and a level-of-significance checklist.

Riverside County Conditional Use Permit, Condition 60.PLANNING.16 requires hiring an archaeologist to evaluate the potential for project impacts to cultural resources, to consult with Native American tribes, to determine if the monitoring of construction will be necessary, and to monitor and to halt construction to accommodate data recovery, if archaeological resources are found.

The City of Riverside created a Cultural Heritage Board and a body of laws relating to historic preservation when it adopted Title 20 of the city's Municipal Code in 1969. Providing guidance on the city's cultural resources program, the ordinance addresses surveying, recording, and designating historic resources; specifies historic district design guidelines; and includes a historic resources inventory database, educational programs, and a historic preservation plan (RERC2008a, p. 6.4-7).

SETTING

The City of Riverside is within the geomorphic province known as the Peninsular Ranges, consisting of numerous small mountain ranges with interspersed plains and valley, all generally trending northwest to southeast. Riverside is in the Perris Plain, with the San Jacinto Mountains to the east, the Santa Ana Mountains to the southwest, and the San Gabriel and San Bernardino Mountains to the north. The Perris Plain is characterized by granite outcrops surrounded or covered by alluvium consisting of sand, gravel, and cobbles. With the proposed RERC 3 & 4 project located about 500 feet south of the Santa Ana River channel, the presence of natural alluvium would be expected. A geotechnical study, however, conducted in 2004 for the construction of Units 1 and 2, indicated that the project site had previously been graded down to bedrock, with no natural alluvial deposits left in place. Additionally, the geotechnical study showed the presence of artificial fill over the entire proposed project site, ranging in depth from 1–5 feet and overlying bedrock. The documented use of the project site as a borrow area accounts for the removal of as much as 16 feet of native soils from the project site in the late 1990s (RERC 2008a, pp. 6.4-4; 6.4-7; 6.5-2–6.5-3; 6.6-7–6.6-8).

At an elevation ranging between 720 and 800 feet above mean sea level, the proposed RERC 3 & 4 project site is located northwest of downtown Riverside on the east side of Acorn Street, across from a water treatment plant, the Riverside Regional Water Quality Control Plant (RRWQCP), located immediately to the west of the proposed project site (RERC 2008a, p. 6.4-1; 6.4-7). The proposed project site is entirely within the bounds of the existing Riverside Energy Resource Center, the construction of Units 1 and 2 of which was certified by the Energy Commission in December 2004 as project 04-SPPE-1. Land use in most of the area on the south and east of the proposed project site is light industrial (RERC 2008a, p. 2-6; fig. 1.3-2).

With respect to prehistory, human occupation in Southern California began in the geological era known as the Late Pleistocene, with the earliest human remains, found on Santa Rosa Island, dating to about 11,000 years BCE.[1] In this period, California's native peoples had a general hunter-forager subsistence mode, living near reliable water sources where food and plant resources were consistently available. This proved a sustainable adaptation when the glaciers of the Pleistocene era retreated and the warmer and drier climate of the succeeding geological era, the Holocene, caused major environmental changes, including a rise in sea level along the coast and desiccation of the formerly plentiful inland lakes (RERC 2008a, p. 6.4-11; Moratto 1984, pp. 78–81).

For the Early Holocene time period (9600-5600 BCE), previous archaeological interpretations had characterized a prevailing, region-wide hunting tradition in Southern California, known as the Western Pluvial Lakes Tradition, as follows: site locations on or near shorelines of bodies of fresh water; economy based on hunting a variety of animals and birds and on gathering shellfish and vegetal products; the absence of ground-stone artifacts (indicating no use of hard seeds as food); distinctive percussion-flaked stone artifacts; and a diverse stone toolkit. Gradually, archaeologists thought, people carrying this tradition spread to the coast where they increasingly exploited marine foods in the later part of this period (Moratto 1984, pp. 90–103; Byrd and Raab 2007, p. 218).

A more recent archaeological interpretation of this period, based on several subsequent decades of field work, identifies the earliest occupation sites in Southern California as located on the coast and on the Southern Channel Islands, where evidence of some of the earliest sea-faring (in wooden seagoing canoes) in North America has been found. Rather than being a later development, this very early adaptation to the exclusive use of maritime resources. such as seals, sea lions, dolphins, and shellfish, has caused archaeologists to re-think their concept of technological developments in California prehistory (Byrd and Raab 2007, pp. 219, 226).

After 5000 BCE, the present climate and environment were established in California. Previous archaeological interpretations saw Native Americans in Middle Holocene (5600 to 1650 BCE) Southern California refining their exploitative abilities by developing their technology and adapting to the seasonal availability of a wide variety of local food sources through a mobile lifestyle that required no substantial houses or permanent villages. One of the key technological developments of this era was the millingstone, which was a rock slab or shallow basin shaped by painstaking grinding with a smaller rock and used to process hard seeds into meal. Along with millingstones, important developments in this era in Southern California were: the appearance of many large shell midden sites on the bays and estuaries of what are now San Diego and Orange Counties; the wide regional distribution of shell beads; and the introduction of pottery and clay figurines. These developments were thought to signal the greater exploitation of marine resources on the coast, the greater exploitation of vegetal food sources

[1] BCE stands for "Before Common Era," which is equivalent to BC. CE, which stands for "Common Era," is equivalent to AD.

throughout the region, and the development of a regional trading network (Moratto 1984, pp. 147–153). After several thousand years of unchanging coastal subsistence based on shellfish, nuts, and grasses, the end of the Middle Holocene period, as recognized previously by archaeologists, came as a result of estuarine silting, which reduced the availability of the essential shellfish. As the use of littoral resources decreased, archaeologists believed, the use of inland resources, particularly acorns, increased, resulting in a shift in site locations from the coast to interior uplands in the Late Holocene period (Byrd and Raab 2007, pp. 219–220).

A more recent archaeological interpretation of the Middle Holocene, based on several subsequent decades of field work, in part contradicts and in part refines key aspects of the earlier interpretation. Paleoenvironmental studies have shown that estuarine silting was not uniform along the entire Southern California coast, and archaeologists have excavated at coastal sites evidencing continuous occupation well up into the Late Holocene (Byrd and Raab 2007, p. 220). Shell bead studies have shown the Middle Holocene trade network was considerably more extensive than previously suspected, across the entire Southern California region, and north through the Great Basin as far as what is now southeastern Oregon (Byrd and Raab 2007, pp. 220–221). Finally, excavations at Middle Holocene sites in the Southern Channel Islands have revealed substantial houses framed with whale ribs and situated in what appears to be a permanent village, possibly occupied year-round. These structures may be the earliest known residential structures in the state (Byrd and Raab 2007, pp. 221–222).

Previous archaeological interpretations of the Late Holocene period (1650 BCE to 1769 CE) in Southern California identified it as the developmental time for the Native American groups and lifeways that Euro-Americans encountered and reported. These interpretations recognized three gradual changes: increasing social complexity in adaptation to a stable, resource-rich environment; assimilation of the technology and practices of Northern and Central California Native American groups; and immigration to the coastal area by Native American groups from the eastern interior (Moratto 1984, p. 153; Byrd and Raab 2007, p. 222). The most important new practice introduced from Northern and Central California into southern California was the technology of processing acorns for food, in particular ground-stone mortars and pestles. Another new practice introduced in this period was cremation of the dead, probably adopted from Native American groups to the east. The use of the bow and arrow and of pottery emerged during this period, as well.

To explain these changes, archaeologists pointed to linguistic evidence, which suggested that, beginning around 500 BCE at the latest, newcomers emigrated from the Great Basin area to the coast between northern San Diego County and southern Los Angeles County. The migrants displaced the resident groups but rapidly adopted the local technology and economic practices. The descendants of the migrants include the Luiseños, Gabrielinos, and Nicoleños. The migrants’ displaced neighbors to the north were probably the ancestors of the Chumash, and to the south, the ancestors of the Diegueños (Moratto 1984, pp. 156, 164–165).

A more recent archaeological interpretation of the Late Holocene, based on several subsequent decades of field work, again, in part contradicts and in part refines key aspects of the earlier interpretation. Instead of environmental stability and an adaptive balance between the population and the resources, the new interpretation sees a trend toward overexploitation of high-value food species resulting in intensified use of less-productive food species and less foraging efficiency over time. A related change in settlement pattern occurred in the Late Holocene, in which three linked kinds of sites were arrayed over a group's territory: large, permanent residential bases, short-term, satellite, residential camps, and specialized-activity sites, facilitating the necessary intensified use of lesser-value foods. A related change in social complexity is posited, brought about by the need for structured decision-making and labor assignment, resulting in the emergence of differing social statuses within a group. A possibly causal factor is implicated by paleoenvironmental data, which indicate that periods of drought and other environmental stresses may have required rapid adaptation and could have played a role in all of these changes (Byrd and Raab 2007, pp. 224–225). The newer interpretation additionally explains the Late Holocene immigration of Great Basin newcomers into Southern California as the continuation and expansion of the linkages between the two areas forged in the Middle Holocene via the shell bead trade network (Byrd and Raab 2007, p. 221).

The traditional territories of four ethnographic groups of Native Americans—the Serrano, the Gabrielino, the Luiseño, and the Cahuilla—may coincide with the proposed project site vicinity. The languages of these four groups are related to each other and to those of Great Basin Native American groups, suggesting that the California groups are the descendents of the Great Basin migrants who came into Southern California around 500 BCE. The territory of the Cahuilla extended from the Salton Sea in the Colorado Desert west to where Riverside is today, and south to north from the San Jacinto Valley to the San Bernardino Mountains. The project area is within the northwestern portion of Cahuilla territory (RERC 2008a, pp. 6.4-17–6.4-18).

Cahuilla villages were usually in canyons or on alluvial fans where a spring was available or the water table was close enough to the surface that the Cahuilla could excavate the large, stepped, walk-in wells that were unique to some of their villages. Villages, usually housing the members of just one clan, consisted of the widely spaced houses of individual families, clan houses, granaries, ramadas (shade structures for food preparation, cooking, and other work), sweat houses, song houses, the clan leader's house, and a clan ceremonial house for religious rituals. Besides owning their village, each clan owned various hunting areas and resource collecting areas where foodstuffs, medicines, and materials for baskets, clothing, tools, and weapons were gathered. Additionally, sacred places were owned by shamans and healers (RERC 2008a, pp. 6.4-19; 6.4-21).

Important food animals included rabbits, mice, and wood rats, but large game, such as mountain sheep, and predators, such as mountain lions, wolves, bobcats, and coyotes were also hunted. Important plant foods included acorns, screwbeans, and mesquite beans, with hard seeds from manzanita, sunflowers, and sages also collected. Berries and grapes and many kinds of greens rounded out the Cahuilla diet. The limited cultivation by the Cahuilla of corn, beans, and pumpkins in small gardens adjacent to springs was noted by members of a Mexican expedition exploring the Coachella Valley in 1823-24, and it has been suggested that they probably adopted this practice from Colorado River Valley groups to the east, along with the craft of pottery-making. Later, the Cahuilla were known to grow barley and other grain crops, indicating the influence of the missions and ranchos flourishing west of the Cahuilla territory (RERC 2008a, pp. 6.4-19–6.4-20).

For Native Americans along the Colorado River, contact with Europeans began in 1540, and for coastal California groups, contact came in 1769. In 1775-76, Spanish Lt. Colonel Juan Bautista De Anza led a group of settlers bound for San Francisco across the narrows of the Santa Ana River (about a mile east of the proposed project site), but had no recorded interaction with the Cahuilla. Regular contact with Europeans did not occur for the Cahuilla until 1816 and 1818, when two mission outposts—Asistencia de San António de Pala and Asistencia de Santa Ysabel—were established near their territory (Smith 1995). Cahuilla territory was not desirable to the missions or to the later rancheros, but the Cahuilla people themselves were recruited as neophytes by the Mission San Luis Rey in the 1820s. The Spanish government had jurisdiction over the missions until 1821, when Mexico gained her independence. In 1834, Mexico secularized the missions and gave the mission lands as ranchos to favored members of the *Californio* elite. In the 1830s and 1840s, Mexican rancheros hired some Cahuilla as laborers (RERC 2008a, pp. 6.4-20–6.4-21; 6.4-23).

After losing the Mexican War, Mexico ceded California to the United States in 1848, and in that same year, gold was discovered in the new territory, causing a dramatic and rapid population increase in California. The Cahuilla were initially unaffected by the Gold Rush. But in 1862, when the first major east-west stage route through the Coachella Valley was established along the Bradshaw trail, connecting the Colorado River gold mines with the Southern California coast, the increased contact with Euro-Americans resulted in exposure to diseases to which the Cahuilla had no resistance. A devastating smallpox epidemic decimated their numbers in 1862-63. The United States government established 10 reservations for the Cahuilla (with some other Native American groups comingled) between 1875 and 1891, when the Cahuilla had been reduced to a population of 1,160, down from pre-contact estimate of 6,000–10,000 persons (RERC 2008a, p. 6.4-21).

The land where the city of Riverside is now located was part of a Mexican land grant, called Rancho Jurupa, made to Juan Bandini in 1838. Jurupa included much of the Santa Ana watershed. Land including what would become the Riverside townsite was later sold to Louis Rubidoux, who sold it to John W. North, a lawyer and agricultural entrepreneur from Minnesota by way of Virginia City, Nevada. North and his partner, Dr. James P. Greves, formed the Southern California Colony Association in 1870 and laid out a one-mile-square townsite south of the Santa Ana River that at first was called Jurupa but soon came to be known as Riverside (RERC 2008a, p. 6.4-19–6.4-23; Search Key to the City n.d.; Orange Empire 2007b).

The destiny of the new settlement was determined in 1873 when a friend in the U.S. Department of Agriculture in Washington, D.C., sent two young navel orange trees (native to Brazil) to Mrs. Eliza Tibbets of Riverside. The soils and climate of the Riverside area proved ideal for these trees, and when mature, they produced seedless oranges superior in sweetness and flavor to other available varieties and had a thick skin that was easy to peel. Of equal importance for commercial citrus growing, their thick skin resisted damage in shipping. This variety of orange tree quickly dominated the fledgling citrus industry of Southern California, and today nearly all of the navel oranges grown in California are descendents of those two trees (California State Parks 2003). Growing navel oranges brought great prosperity to Riverside—it was ranked the richest city, per capita, in the nation in 1895. The town became the seat of the County of Riverside in 1893, when the new county was formed from parts of San Bernardino and San Diego Counties (Orange Empire 2007b).

The burgeoning citrus industry required transportation of their produce, so the Atchison, Topeka & Santa Fe railroad came to Riverside in 1882, and the Southern Pacific Railroad extended a branch line to the town in 1892. The San Pedro, Los Angeles & Salt Lake Railroad (now part of the Union Pacific Railroad), chose to enter Riverside from the north, across the Santa Ana Anza Narrows, necessitating the construction of a 984-foot-long concrete railroad viaduct in 1904 (RERC 2008a, p. 6.4-19–6.4-23).

Other late nineteenth-century infrastructure important to the citrus industry included structures related to water and irrigating the groves—dams, canals, flumes, tunnels, and artesian wells. Numerous water companies fought on the ground and in the courts over water rights to the Santa Ana River and its tributaries. In the twentieth century, the engineering became more sophisticated, but some of the early infrastructure continues in use today, for example, the Gage Canal, constructed in 1885. A newer water conveyance system is represented near the proposed project site, with the Upper Feeder of the Metropolitan Water District's Colorado River Aqueduct, dating to 1950, carried over the Santa Ana River on a concrete support structure about 0.3 mile northeast of the RERC. Water reclamation infrastructure is also represented, with the RRWQCP constructed in 1942 with Works Progress Administration assistance. This facility has been enlarged several times since, but some of the original buildings are still present and in use (RERC 2008a, p. 6.4-24).

The resources in, of, and adjacent to the Santa Ana River attracted people to the vicinity of the proposed project site in both prehistory and history. Consequently, the known cultural resources that the Riverside Public Utilities (RPU) identified from a records search and a pedestrian survey as present within one mile of the proposed project site, are many (35) and diverse. The most numerous type of identified prehistoric resource is the bedrock milling feature (nine examples of mortars, basins, and slicks), with lithic scatters and isolates (five examples) being the next more common, and with pictographs painted on boulders (two examples) and habitation debris (one example) also represented. From the historic period, known resources include State Historical Landmark # 787 (the De Anza crossing of the Santa Ana River), the Union Pacific Bridge, the RRWQCP, the Colorado River Aqueduct's support structure over the Santa Ana River, a river gauge station, two residences, a Quonset hut, two industrial buildings, a canal, two dams, a riverbank retaining wall, a lakefront dock, and three trash scatters (RERC 2008a, Table 6.4-2).

RPU communications with local historic preservation agencies and organizations, and with the Native American Heritage Commission and local Native Americans, returned no additional information on known cultural resources (RERC 2008a, p. 6.4-35–6.4-37). Three Native American groups, the Morongo Band of Mission Indians, the Soboba Band of Luiseño Indians, and the Pechanga Band of Mission Indians responded to RPU's informational letters. The Morongo Band recommended monitoring if Native American cultural material were found on the proposed project site. The Soboba Band requested monitoring during all ground disturbance at the proposed project site. The Pechanga Band requested copies of all project-related reports and site records and government-to-government consultation with the RPU and the Energy Commission regarding disposition of any artifacts found during construction (RERC 2008a, p. 6.4-35; App. 6.4-B).

On June 18, 2008, Energy Commission staff requested from the NAHC a list of Native Americans interested in development in Riverside County and on June 20, staff received a list of 13 contacts from the NAHC. Staff then sent letters informing the 13 Native American individuals or groups about the proposed RERC 3 & 4 project on July 18, 2008, and requested them to contact staff if they had any concerns regarding cultural resources. Staff received responses from two Native American groups. On August 5, the Soboba Band of Luiseño Indians wrote to inform staff that the RERC 3 & 4 project area falls within their Tribal Traditional Use Area. They requested that the RPU conduct further consultation with Native American tribes and that the RPU provide the Band with copies of archaeological and or cultural resources documentation. The Santa Rosa Band of Mountain Cahuilla Indians wrote on August 8, 2008, telling staff that the RERC 3 & 4 project area is located within the Band's Traditional Use Area. The Band, therefore, requested that the RPU provide to them a copy of the archaeological report associated with the AFC, that a Native American monitor be present during any and all ground-disturbing activities, and that the Band be notified when any cultural resources are discovered during ground-disturbing activities.

No cultural resources were identified on or near the proposed project site, either during the present RERC 3 & 4 review or during the previous review for RERC Units 1 and 2, with the exception of the original surviving buildings of the RRWQCP (RERC 2008a, p. 6.4-35–6.4-41). That facility had been recorded in the previous RERC Units 1 and 2 cultural resources study, and the recordation was updated in the present study. The qualified architectural historian who completed the update recommended the facility as potentially individually eligible for the California Register of Historical Resources (CRHR).The facility meets CRHR Criterion 1 (association with significant events in our history) in being a product of the New Deal/WPA program collaborating with local government to develop infrastructure. The facility also meets CRHR Criterion 3 (embodies distinctive architectural design) in having its 1942 administrative and mechanical buildings and grounds designed to look like a modern ranch house with its typical landscaping. The condition of these structures was indicated to be "remarkably intact" (RERC 2008a, p. 6.4-40–6.4-41).

PROJECT FACILITIES

The proposed RERC 3 & 4 project consists of two new, simple-cycle, natural-gas-fired, combustion-turbine, electrical generating units, with a nominal generating capacity of 95 MW, needed to provide peaker power during heavy demand periods, for distribution only within RPU's system. The two new units would be identical to the original two RERC units and located to the north of them on the same 16-acre parcel, owned by the City of Riverside (RERC 2008a, pp. 2-1, 2-6). RERC 3 & 4 would share much of the existing auxiliary equipment of Units 1 & 2. Consequently, further new equipment required for RERC 3 & 4 would be limited to adding two more bays to the existing RERC switchyard, two demineralized water storage tanks to the existing make-up water system, three new natural-gas compressors, two new generator step-up transformers, and a water laboratory. The proposed RERC 3 & 4 project description also includes a new Dispatch and Scheduling Building for RPU, but this addition is not required to operate the RERC. Tertiary reclaimed water from RRWQCP would be used as process water, and all wastewater, except that contaminated with oil, would be recycled. RERC 3 & 4 would have the ability to use potable water as process water in an emergency. No new off-site connections would be required for the proposed RERC 3 & 4 project. An existing Southern California Gas Company natural gas metering station on the RERC property already serves Units 1 and 2, and the fuel pipeline for the proposed RERC 3 & 4 project would connect to this station. All new 69-kV cabling would be within the RERC boundaries, with the interconnection to the City of Riverside's 69-kV sub-transmission system through the existing RERC switchyard and existing transmission lines to two substations, the RERC-to-Mountainview Substation (114 MW normal rating) and the RERC-to-Riverside Substation (97 MW normal rating) (RERC 2008a, pp. 1-5; 2-1; 2-6; 2-9; 2-17; Table 2.5-1; 5-2–5-3).

IMPACTS

Below is the Environmental Checklist that identifies potential impacts to cultural resources from the proposed RERC 3 & 4 project. Following the checklist is a discussion of impacts and an explanation of staff's conclusions.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
CULTURAL RESOURCES – Would the project:				
A. Cause a substantial adverse change in the significance of a historical resource as defined in section15064.5?				X
B. Cause a substantial adverse change in the significance of an archaeological resource pursuant to section15064.5?				X
C. Disturb any human remains, including those interred outside of formal cemeteries?				X

DISCUSSION OF IMPACTS

The impacts resulting from the proposed RERC 3 & 4 project that would be of potential concern regarding cultural resources include a visual intrusion on the integrity of setting and integrity of feeling of a significant historic standing structure, the RRWQCP, and direct impacts from project ground disturbance on buried archaeological resources that have not yet been identified but could be discovered during construction.

A. Cause a Substantial Adverse Change in the Significance of Historical Resources: No Impact

The RPU believes the integrity of setting and integrity of feeling of the RRWQCP would not be affected by the addition of the proposed RERC 3 & 4 project because the character of the setting around the RRWQCP changed in the post-war period from rural residential to commercial and light industrial, and the latter was dominant by the 1960s (RERC 2008a, p. 6.4-19–6.4-23). Staff agrees with this assessment that the proposed RERC 3 & 4 project would have no impact on any significant historic built-environment resources.

B. Cause a Substantial Adverse Change in the Significance of an Archaeological Resource: No Impact

The RPU has established that, prior to the construction on the RERC of Units 1 and 2, the proposed project site had been stripped down to bedrock, with as much as 16 feet of native soils removed for use at the Tequesquite Landfill (RERC 2008a, p. 6.4-4). The RPU has also established that 1–5 feet of artificial fill currently overlies bedrock on the proposed project site (RERC 2008a, pp. 6.6-7–6.6-8). These conditions mitigate against the presence of buried archaeological deposits, so staff's conclusion is that the proposed RERC 3 & 4 project would have no impact on any archaeological resources.

Three of the Native American groups responding to RPU and staff informational letters, the Morongo Band of Mission Indians, the Soboba Band of Luiseño Indians, and the Santa Rosa Band of Mountain Cahuilla Indians, requested monitoring of RERC 3 & 4 project ground disturbance. Because of the total disturbance of the project site down to bedrock, as noted above, staff concluded that monitoring would not be necessary, and so provided no condition of exemption to require monitoring. Additionally, one Native American group, the Morongo Band of Mission Indians, requested that if human remains should be found during ground disturbance, construction should cease and the Riverside County coroner should be notified. Staff notes that the RPU states its intent to halt construction if cultural resources of any kind are found (RERC 2008a, p. 6.4-1) and to comply with state law (Pub. Res. Code, § 5097.98) if human remains are found (RERC 2008a, p. 6.4-41). Consequently, staff has not included a condition of exemption requiring notification of the coroner in the event of the discovery of human remains.

Staff notes that four Native American groups having traditional ties to the area where the proposed project would be located responded to either RPU's or staff's letters requesting information or expressing concerns. This is a large response, compared to what staff typically sees for much of the rest of the state, but commensurate with staff's previous experience with power-generation projects in Riverside County. Because the Native American community sustains a high level of interest in being involved in the cultural resources aspects of planning and development in Riverside County, staff recommends that RPU fulfill the informational requests of the four different interested Native American groups who responded to RPU's and staff's letters. While not required under law, staff has provided a condition of exemption, **CUL-1**, to effect that fulfillment.

C. Disturb Human Remains: No Impact

For the same reasons as were provided under "**B.**," above, staff concludes that the proposed RERC 3 & 4 project would have no impact on any human remains.

CUMULATIVE IMPACTS

A cumulative impact refers to a proposed project's incremental effects considered over time and together with those of other nearby, past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project (Pub. Resources Code sec. 21083; Cal. Code Regs., tit. 14, secs. 15064(h), 15065(c), 15130, and 15355). The construction of other projects in the same area as the proposed project could affect unknown subsurface archaeological deposits, both prehistoric and historic.

The potential impacts to cultural resources from the 2004 construction of the RERC's Units 1 and 2 were mitigated to a less than significant level by compliance with the Energy Commission's Conditions of Exemption **CUL-1** through **CUL-7**. Because the proposed RERC 3 & 4 project would have no impacts on any cultural resources, it would also make no contribution to a cumulative impact on cultural resources, and since similar protocols to those required of RERC 1 & 2 can be applied to other projects in the area, staff does not expect any incremental effects of the proposed RERC 3 & 4 project to be cumulatively considerable when viewed in conjunction with other projects.

CONCLUSIONS

Staff concludes that the proposed RERC 3 & 4 project would cause no significant adverse impacts to any significant cultural resources. Staff proposes one condition of exemption, **CUL-1**, to provide for fulfilling the informational requests of the four different interested Native American groups who responded to RPU's and staff's letters.

PROPOSED CONDITION OF EXEMPTION

CUL-1 During and after construction, the project owner shall fulfill the requests received by the RPU and by Energy Commission staff from Native American tribes, groups, or individuals to:

- be consulted if significant cultural resources are found;
- be consulted on the formulation of any archaeological treatment plan required for discovered cultural resources found to be significant;
- receive copies of all project-related archaeological reports and site records;
- engage in consultation with the project owner and the City of Riverside's Energy Commission Compliance Manager (CoRCM) regarding the treatment and disposition of any recovered artifacts; and
- be involved in all cultural resources consultation throughout the project.

Verification: No later than 30 days following the discovery of any Native American cultural materials or the completion of any archaeological reports or records concerning Native American cultural resources, the project owner shall submit to the Energy Commission's Compliance Project Manager (CPM) copies of the transmittal letters sent to the Chairperson of the Native American tribes or groups to whom the requested information and/or copies of reports and records were sent. Additionally, the project owner shall submit to the CPM copies of letters of transmittal for all subsequent responses to Native American requests for notification and consultation, and copies of any agreements or other joint documents.

CULTURAL RESOURCES ACRONYM GLOSSARY

RIVERSIDE ENERGY RESOURCE CENTER

AFC	Application for Certification
ARMR	Archaeological Resource Management Report
BCE	Before Common Era
CE	Common Era
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
Conditions	Conditions of Certification
CRHR	California Register of Historical Resources
CRM	Cultural Resources Monitor
CRMMP	Cultural Resources Monitoring and Mitigation Plan
CRR	Cultural Resource Report
CRS	Cultural Resources Specialist
DPR 523	Department of Parks and Recreation cultural resource inventory form
FSA	Final Staff Assessment
LORS	laws, ordinances, regulations, and standards
MCR	Monthly Compliance Report
MLD	Most Likely Descendent
NAHC	Native American Heritage Commission
NRHP	National Register of Historic Places
OHP	Office of Historic Preservation
PSA	Preliminary Staff Assessment
RERC	Riverside Energy Resource Center

RERC 3 & 4	Proposed project to add two new power generators to RERC
RPU	Riverside Public Utilities, the project proponent
RRWQCP	Riverside Regional Water Quality Control Plant
SHPO	State Historic Preservation Officer
Staff	Energy Commission cultural resources technical staff
WEAP	Worker Environmental Awareness Program

REFERENCES

The tn: 00000 in a reference below indicates the transaction number under which the item is catalogued in the Energy Commission's Docket Unit. The transaction number allows for quicker location and retrieval of individual items docketed for a case or used for ease of reference and retrieval of exhibits cited in briefs and used at Evidentiary Hearings.

Byrd and Raab 2007— Brian F. Byrd and L. Mark Raab, "Prehistory of the Southern Bight: Models for a New Millenium," in *California Prehistory: Colonization, Culture, and Complexity*, Terry L. Jones and Kathryn A. Klar, eds., New York: Altamira Press, 2007.

California State Parks 2003—California State Parks, "California Citrus State Historic Park Brochure," http://www.parks.ca.gov/pages/649/files/CALCITRUS.pdf. Accessed 7/16/08.

City of Riverside 1969—Municipal Code, Title 20, http://www.riversideca.gov/municode/title20.asp. Accessed 7/18/08.

County of Riverside 2003—Riverside County General Plan, http://www.rctlma.org/genplan/default.aspx. Accessed 7/18/08.

County of Riverside Planning Department 2007—Cultural Resources Review, http://www.tlma.co.riverside.ca.us/planning/content/devproc/culture/cult_resource.html. Accessed 7/18/08.

Moratto 1984—Michael J. Moratto, *California Archaeology*, Orlando, Fla.: Academic Press, 1984.

Orange Empire 2007a—The Orange Empire of Southern California, "History," http://www.orange-empire.com/v02/misc/history.shtml. Accessed 7/16/08.

Orange Empire 2007b—The Orange Empire of Southern California, "Riverside," http://www.orange-empire.com/v02/cities/riverside/. Accessed 7/16/08.

RERC2008a—M. Tatterson/M. Jones (tn45678), Application for Certification of an SPPE. Dated 3/19/08. Submitted to Dockets 3/19/08.

Search Key to the City n.d.—Top USA City Resource Guide and Cities Directory, "Riverside History," http://www.usacitiesonline.com/cacountyriversidehistory.htm. Accessed 7/16/08.

Smith 1995—C. R. Smith, "An Introduction to California's Native People: Missionization," http://www.cabrillo.edu/~crsmith/anth6_missions.html. Accessed 7/15/08.

ENERGY RESOURCES

Testimony of Erin Bright

INTRODUCTION

The Energy Resources section examines energy use by the Riverside Energy Resource Center (RERC) to ensure that the RERC's consumption of energy will not result in significant adverse impacts on the environment. In this analysis, staff addresses the issue of inefficient and unnecessary consumption of energy.

In order to support the Energy Commission's findings, this analysis will:

- examine whether the facility will likely present any adverse impacts upon energy resources; and
- examine whether these adverse impacts are significant.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

No federal, state, or local LORS apply to the efficiency of this project.

SETTING

Riverside Public Utilities (RPU) proposes to construct and operate two additional simple cycle gas turbine generators, Units 3&4, in order to increase the peaking capacity at its Riverside Energy Resource Center (RERC) by 95 MW (nominal net output). Power from the existing facility supplies the internal needs of the City of Riverside during summer peak electrical demands and serves as emergency generation in the event RPU is islanded from the external transmission system. RPU experienced an unexpected increase in peak load in 2006 which pushed forecasted demand for 2009 beyond current capacity; Units 3&4 would provide the city with additional peaking capacity to meet this increased internal demand. No power from RERC, including Units 3&4, would be exported outside the City of Riverside ([ref. application], SPPE §§ 1.2, 2.1.2).

Units 3&4 of the RERC would consist of two General Electric LM6000PC SPRINT NxGen combustion turbine generators (CTG) rated at 50 MW (nominal) each. The CTGs would utilize a shared inlet air chiller to maintain output and efficiency during periods of high ambient temperature as well as water injection for power augmentation and NOx reduction ([ref. application], SPPE §§ 2.5, 2.5.1). The exhaust stacks would each have a selective catalytic reduction system to further control NOx emissions from the plant ([ref. application], SPPE §§ 2.5, 2.5.2).

IMPACTS

BACKGROUND

RPU is applying for a Small Power Plant Exemption (SPPE) in order to exempt the RERC Units 3&4 from the power plant site certification process. The Warren-Alquist Act (Public Resources Code, § 25541) allows the Energy Commission to exempt electric generating power plants with generating capacity of up to 100 MW from the site certification process if it finds that the project construction and operation will not have substantial adverse impacts on the environment or energy resources. As illustrated below, RERC Units 3&4 will not have a substantial or significant adverse impact on energy resources, and thus qualifies for this exemption from the energy resources standpoint.

The CEQA Guidelines state that the environmental analysis "…shall describe feasible measures which could minimize significant adverse impacts, including where relevant, inefficient and unnecessary consumption of energy (Cal. Code Regs., tit. 14 § 15126.4(a)(1)). Appendix F of the Guidelines further suggests consideration of such factors as the project's energy requirements and energy use efficiency; its effects on local and regional energy supplies and energy resources; its requirements for additional energy supply capacity; its compliance with existing energy standards; and any alternatives that could reduce wasteful, inefficient and unnecessary consumption of energy (Cal. Code regs., tit. 14, § 15000 et seq., Appendix F).

The inefficient and unnecessary consumption of energy, in the form of non-renewable fuels such as natural gas, constitutes an adverse environmental impact. (Cal. Code regs., tit. 14, § 15126.4(a)(1)), (Cal. Code regs., tit 14, § 15000 et seq., Appendix F). An adverse impact can be considered significant if it results in:

- adverse effects on local and regional energy supplies and energy resources;
- a requirement for additional energy supply capacity;
- noncompliance with existing energy standards; or
- the wasteful, inefficient and unnecessary consumption of fuel or energy.

ENERGY REQUIREMENTS

Any power plant large enough to fall under Energy Commission jurisdiction will consume large amounts of energy. Under normal conditions, RERC Units 3&4 would burn natural gas at a nominal rate up to 844 million Btu (MMBtu) per hour Lower Heating Value (LHV) ([ref. application], SPPE § 2.5, Table 2.5-2). This is a substantial rate of energy consumption, and holds the potential to impact energy supplies.

Under expected project conditions, electricity will be generated at a full load efficiency of approximately 38.2% LHV with the combustion turbines operating at full load ([ref. application], SPPE § 3.1).

The applicant has described its source of natural gas for RERC Units 3&4 ([ref. application], SPPE §§ 1.4, 2.6, Appendix 2.6). The project will burn natural gas delivered to the site by Southern California Gas Company (SoCal) via the existing onsite connection to SoCal's gas transmission line that currently delivers natural gas to RERC Units 1&2. Fuel gas compressors would be installed to provide the new CTGs in Units 3&4 with adequate pressure ([ref. application], SPPE §§ 1.4, 2.6). The SoCal system is capable of delivering the required quantity of gas to RERC Units 3&4 ([ref. application], SPPE Appendix 2.6). Furthermore, SoCal is a subsidiary of Sempra Energy and has an extensive gas supply infrastructure, offering access to vast reserves of gas in North America, including New Mexico, Texas, and Wyoming. This source represents far more gas than would be required for a project this size. It is therefore highly unlikely that the RERC could pose a substantial increase in demand for natural gas in California. There is no real likelihood that the RERC will require the development of additional energy supply capacity.

Compliance with Energy Standards

No standards apply to the efficiency of RERC Units 3&4.

Alternatives To Reduce Wasteful, Inefficient And Unnecessary Energy Consumption

RERC Units 3&4 could be deemed to create significant adverse impacts on energy resources if alternatives existed that would reduce the project's use of fuel. Evaluation of alternatives to the project that could reduce wasteful, inefficient or unnecessary energy consumption first requires examination of the project's energy consumption. Project fuel efficiency, and therefore its rate of energy consumption, is determined by the configuration of the power producing system and by the selection of equipment used to generate power.

PROJECT CONFIGURATION

The project objective is to generate peaking power for RPU's customers ([ref. application], SPPE §§ 1.2, 2.1, 2.1.4, 2.5, 2.5.1, 7.1). RERC Units 3&4 would be configured as two simple cycle power plants in parallel, in which electricity is generated by two gas turbine generators ([ref. application], SPPE §§, 2.5, 2.5.1). This configuration, with its short start-up time and fast ramping[1] capability, is well suited to providing peaking power. Further, when reduced output is required, one turbine generator can be shut down, allowing the remaining machine to produce 50% of full power at optimum efficiency, rather than operating a single, larger machine at inefficient part load output.

EQUIPMENT SELECTION

Modern gas turbines embody the most fossil-fuel-efficient electric generating technology available today. The applicant would employ two General Electric LM6000PC SPRINT NxGen gas turbine generators ([ref. application], SPPE §§ 2.5, 2.5.1, 3.1, Table 2.5-1, Appendix 6.1). The LM6000PC SPRINT NxGen gas turbine to be employed in RERC Units 3&4 represents one of the most modern and efficient such machines now

[1] Ramping is increasing and decreasing electrical output to meet fluctuating load requirements.

available. The Sprint version of this machine is nominally rated at 50.5 MW and 40.3% efficiency LHV at ISO[2] conditions (GTW 2008).

Alternative machines that can meet the project's objectives are the SGT-800 and FT8 TwinPac which, like the LM6000, are aeroderivative machines, adapted from Siemens Energy and Pratt & Whitney Power Systems, respectively. The Siemens SGT-800 gas turbine generator in a simple cycle configuration is nominally rated at 47 MW and 37.5% LHV at ISO conditions. The Pratt & Whitney FT8 TwinPac gas turbine generator in a simple cycle configuration is nominally rated at 51 MW and 38.4% LHV at ISO conditions (GTW 2008).

Machine	Generating Capacity (MW)	ISO Efficiency (LHV)
GE LM6000PC Sprint	**50.5**	**40.3 %**
Siemens SGT-800	47	37.5 %
P & W FT8 TwinPac	51	38.4 %

Source: GTW 2008

The LM6000PC NxGen Sprint is further enhanced by the incorporation of spray intercooling (thus the name, SPRay INTercooling), which takes advantage of the aeroderivative machine's two-stage compressor.[3] By spraying water into the airstream between the two compressor stages, the partially compressed air is cooled, reducing the amount of work that must be performed by the second stage compressor. This reduces the power consumed by the compressor, yielding greater net power output and higher fuel efficiency. The benefits in generating capacity and fuel efficiency increase with rising ambient air temperatures. At temperatures above 90°F, the Sprint machine enjoys a four percent increase in both power output and efficiency (GTW 2000).

While the LM6000 enjoys a slight advantage in fuel efficiency over the alternative machines, any differences among the three in actual operating efficiency will be relatively insignificant. Other factors such as generating capacity, cost, and ability to meet air pollution limitations are some of the factors considered in selecting the turbine model. Staff believes RPU has selected machines that provide optimum fuel efficiency while satisfying the project's objectives.

Efficiency of Alternatives to the Project

Alternative Generating Technologies

The applicant addresses alternative generating technologies in its application ([ref. application], SPPE § 7.3). Fossil fuels, fuel cells, solar, wind, hydroelectric, biomass and biodiesel technologies are all considered. Biomass and fossil fuels other than natural gas cannot meet air quality limitations. Renewables require more physical area and are not always available when peaking power is needed. Given the project objectives,

[2] International Standards Organization (ISO) standard conditions are 15°C (59°F), 60% relative humidity, and one atmosphere of pressure (equivalent to sea level).

[3] The larger industrial type gas turbines typically are single-shaft machines, with single-stage compressor and turbine. Aeroderivatives are two-shaft (or, in some cases, three-shaft) machines, with two-stage (or three-stage) compressors and turbines.

location and air pollution control requirements, staff agrees with the applicant that only natural gas-burning technologies are feasible at this time.

Natural Gas Burning Technologies

Fuel consumption is one of the most important economic factors in selecting an electric generator; fuel typically accounts for more than two-thirds of the total operating costs of a fossil-fired power plant (Power 1994). In order to maintain reasonable costs to its customers, where operating costs are critical in determining the economic efficiency of a power plant, RPU is strongly motivated to purchase fuel efficient machinery.

Capital cost is also important in selecting generating machinery. Recent progress in the development of gas turbines, incorporating technological advances made in the development of aircraft (jet) engines, combined with the cost advantages of assembly-line manufacturing, has made available machines that not only offer the lowest available fuel costs, but at the same time sell for the lowest per-kilowatt capital cost. It is therefore to be expected that RPU has chosen one of the most efficient generating technologies available.

Inlet Air Cooling

A further choice of alternatives involves the selection of gas turbine inlet air-cooling methods.[4] The two commonly used techniques are the evaporative cooler or fogger, and the chiller; both devices increase power output by cooling the gas turbine inlet air. A mechanical chiller can offer greater power output than the evaporative cooler on hot, humid days, but consumes electric power to operate its refrigeration process, thus slightly reducing overall net power output and, thus, overall efficiency. An absorption chiller uses less electric power, but necessitates the use of a substantial inventory of ammonia. An evaporative cooler or a fogger boosts power output best on dry days; it uses less electric power than a mechanical chiller, possibly yielding slightly higher operating efficiency. The difference in efficiency among these techniques is relatively insignificant.

RPU proposes to employ electric inlet air chilling to cool the combustion turbine inlet air ([ref. application], SPPE §§ 2.5, 2.5.1, 7.4). Given the climate at the project site and the relative lack of clear superiority of one system over the other, staff agrees that the applicant's approach will yield no significant adverse energy impacts.

Conclusions on Efficiency of Alternatives

The project configuration (simple-cycle) and generating equipment (LM6000PC SPRINT NxGen gas turbines) chosen appear to represent an effective means of satisfying the project objectives. The short start-up time and fast ramping capability associated with this configuration would serve the project in meeting its objective of providing peaking power to RPU's customers. Energy Commission staff believes RERC Units 3&4 would not constitute a significant impact on energy resources because there are no feasible

[4] A gas turbine's power output decreases as ambient air temperatures rise. The LM6000 Sprint produces peak power at 50°F; this peak output can be maintained in much hotter weather by cooling the inlet air.

alternatives that could satisfy the project's objectives and significantly reduce energy consumption.

CUMULATIVE IMPACTS

Staff knows of no other nearby projects that could result in significant adverse cumulative energy impacts.

Staff believes that construction and operation of the project will not bring about indirect impacts, in the form of additional fuel consumption, that would not have occurred but for the project. Existing older, less efficient power plants consume more natural gas to operate than the new, more efficient plants such as the RERC. The high efficiency of the proposed facility should allow it to compete very favorably, running at a high capacity factor, replacing less efficient power generating plants, and therefore not impacting or even reducing the cumulative amount of natural gas consumed for power generation.

CONCLUSIONS

RERC Units 3&4, if constructed and operated as proposed, would generate a nominal 95 MW of electric power with the maximum overall project fuel efficiency of 38.2% LHV. While it would consume substantial amounts of energy, the project would do so in an efficient manner. It would not create significant adverse effects on energy supplies or resources, would not require additional sources of energy supply, and would not consume energy in a wasteful or inefficient manner. No energy standards apply to the project. Staff therefore concludes that RERC Units 3&4 would present no significant adverse impacts upon energy resources.

PROPOSED CONDITIONS OF EXEMPTION

No conditions of exemption are proposed.

REFERENCES

RERC2008a (tn45678) Application for an SPPE dated 3/19/08. Submitted to Dockets 3/19/08.

GTW (Gas Turbine World). 2008. *Gas Turbine World 2008 Performance Specs, 25th edition*, p. 13-19.

GTW (Gas Turbine World). 2000. "LM6000 Sprint design enhanced to increase power and efficiency", *Gas Turbine World*, July-August 2000, pp. 16-19.

Power (Power Magazine). 1994. "Operating and maintaining IPP/cogen facilities", Power, September 1994, p. 14.

GEOLOGY, MINERAL RESOURCES, AND PALEONTOLOGY

Testimony of Michael S. Lindholm, P.G.

SUMMARY OF CONCLUSIONS

The proposed Riverside Energy Resource Center, Units 3 and 4 (RERC Units 3&4) Project is located entirely within the existing Riverside Energy Resource Center (RERC) plant facility in an area with minimal geologic hazards, and no known viable geologic or mineralogic resources. The geologic hazards present, which include strong ground shaking and expansive soils, can be effectively mitigated to less than significant as long as the recommendations of the project geotechnical reports (LOR, 2004 and 2008) are followed during design and construction of the project. As a result, the potential for geologic hazards to affect operation of the site is considered negligible, and construction and operation of the proposed facility should have no isolated or cumulative impact on potential geologic or mineralogic resources.

The site is overlain by 1 to 6 feet of artificial fill underlain by weathered to unweathered igneous bedrock with no potential for paleontological resources to be encountered during excavation. Quaternary older alluvial fan deposits, which have a high paleontological sensitivity, have reportedly been removed during prior mass grading of the site. The potential to encounter significant paleontological resources in any remaining undisturbed Quaternary sediments is low. As long as the Paleontological Conditions of Exemption are adopted, the potential impact to any such resources can be effectively mitigated to a less than significant level.

INTRODUCTION

The proposed RERC Units 3&4 power plant project would be located on 2.2 acres of the existing 16-acre RERC site. Units 3&4 would be constructed immediately adjacent to Units 1&2, and would add approximately 95 megawatts (MW) of additional peaking capacity to the 96 MW already generated by the two existing units. The new combustion turbine generators (CTG) and ancillary facilities would be virtually identical to those currently in operation. Some expansion of existing facilities on site would be required, and all project linears would connect to existing lines within the RERC property boundary.

In this section, Energy Commission staff discusses potential impacts of the proposed project regarding geologic hazards, geologic (including mineralogic), and paleontologic resources. Staff's objective is to ensure that there would be no substantial adverse impacts to significant geological and paleontological resources during project construction, operation and closure. A brief geological and paleontological overview of the project is provided. The section concludes with staff's proposed monitoring and mitigation measures with respect to geologic hazards and geologic, mineralogic, and paleontologic resources, with the inclusion of Conditions of Exemption.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

The applicable Laws, Ordinances, Regulations and Standards (LORS) are listed in the Small Power Plant Exemption (SPPE) Application in Sections 6.5.2 and 6.6.2 (CEC, 2008a). Staff has identified the following LORS for geologic hazards and resources, and paleontologic resources, useful as significance criteria for evaluating whether the project as proposed would have a substantial adverse impact on the environment.

FEDERAL

The existing Riverside Energy Resource Center is not located on federal land and does not involve any federal actions; as such, the National Environmental Policy Act (NEPA) or the Antiquities Act of 1906 do not apply to the proposed project. In addition, there are no other federal LORS for geological hazards and resources or grading that apply to the proposed project.

STATE AND LOCAL

The project shall be designed and constructed to the 2007 edition of the California Building Code (CBC). The CBC includes a series of standards, adopted from the International Building Code (IBC, 2006) that is used in project investigation, design, and construction (including grading and erosion control).

The California Environmental Quality Act (CEQA) Guidelines Appendix G provides a checklist of questions that a lead agency should normally address if relevant to a project's environmental impacts.

- Section (V) (c) asks if the project would directly or indirectly destroy a unique paleontological resource or site or unique geological feature.
- Sections (VI) (a), (b), (c), (d), and (e) pose questions that are focused on whether or not the project would expose persons or structures to geologic hazards.
- Sections (X) (a) and (b) pose questions about the project's effect on mineral resources.

Other applicable LORS in the State of California Public Resources Code (PRC) include the Alquist-Priolo Earthquake Fault Zoning Act, the Seismic Hazards Mapping Act, the Warren-Alquist Act, and Chapter 1.7, Sections 5097.5 and 30244. These regulations provide guidelines for mitigation against surface fault rupture and the effects of strong ground shaking, as well as to "give greatest consideration to the need for protecting areas of critical environmental concern" and to provide regulation for removal of paleontological resources from state lands. The Cobey-Alquist Flood Plain Management Act in the California Water Code directs local agencies to establish land use regulations in areas classified as "designated floodways" by the state.

The "Measures for Assessment and Mitigation of Adverse Impacts to Non-renewable Paleontologic Resources: Standard Procedures" (SVP, 1995) is a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources. They were adopted in October 1995 by the Society of Vertebrate Paleontology (SVP), a national organization of professional scientists.

To the extent not exempted by California Government Code Section 53091, the RERC Units 3&4 project shall comply with all applicable sections of the City of Riverside General Plan 2025, adopted in November of 2007.

REGIONAL SETTING

The proposed RERC Units 3&4 power plant project is located along the south side of the Santa Ana River in Riverside, California. The site is situated at the northwestern end of the Perris Block (also called the Perris Plain), which is within the Peninsular Ranges geomorphic province of Southern California (Norris and Webb, 1990; USGS, 2006). The geomorphic province is characterized by a number of northwest-trending mountain ranges separated by alluvium-filled valleys and erosional plains. The east-west-trending San Gabriel and San Bernardino Mountains, which are part of the Transverse Ranges geomorphic province, lie to the northwest and northeast, respectively.

Tectonically, the Peninsular Ranges geomorphic province is characterized by major right-lateral strike-slip faults, including the San Andreas, San Jacinto, Elsinore and Imperial Fault Zones. The boundary between the western edge of the North American Plate and the eastern edge of the Pacific Plate is represented by the San Andreas Fault System, with relative plate motion being distributed along the San Andreas and related fault zones (Elders, 1979). High mountain ranges, such as the San Jacinto, Santa Ana and Santa Rosa Mountains, and areas of tectonic subsidence, such as Lake Elsinore within the Elsinore-Temecula trough, and the Salton Sea, have developed in association with strike-slip movement along the major fault zones (Norris and Webb, 1990). The Transverse Ranges geomorphic province is characterized by compressional tectonics and east-west-striking thrust and reverse faults.

The city of Riverside occupies the northwest end of the Perris Plain, which is bounded by the San Jacinto Fault Zone and San Jacinto Mountains to the east and the Elsinore Fault Zone and Santa Ana Mountains to the southwest. The Perris Plain is a broad, relatively flat-lying erosional surface with numerous remnant bedrock hills (Norris and Webb, 1990). The bedrock is predominantly Cretaceous age granitic rocks composed of quartz monzonite, granodiorite and quartz diorite. Lesser volumes of volcanic and Paleozoic age metamorphic rocks are also present. The nearest prominent erosional remnant to the RERC site are the Pedley Hills, which are located 1.2 miles to the north and rise roughly 500 feet above the surrounding alluvial plains (USGS, 2001).

SITE GEOLOGY

The majority of the RERC site is mapped as late to middle Pleistocene age older alluvium (Dibblee, Jr., 2004; USGS, 2001 and 2006). These sediments are tan to light reddish brown and composed of sand, gravel and locally boulders. The alluvial sheets are moderately to deeply dissected with soil development measured in 10's of centimeters. A small portion of the RERC site is mapped as Cretaceous Age quartz diorite, although the granitic rocks are not shown within the footprint of Units 3&4 (USGS, 2001 and 2006). Igneous rocks of Cretacaceous age are mapped within 300 feet of the site, including an extensive area of borrow pits to the east and in incised stream banks of the Santa Ana River and its tributaries to the north and west. These mapped exposures suggest that granitic rocks underlie a relatively shallow sheet of Quaternary alluvial fan deposits.

The project geotechnical consultant advanced 29 borings, 5 cone penetration tests, and 33 backhoe test pits across the proposed RERC site to characterize the subsurface conditions (LOR, 2004). A follow-up preliminary geotechnical review report was compiled specifically for the RERC Units 3&4 site, although no further exploration or laboratory testing was conducted (LOR, 2008). Igneous bedrock was encountered in all borings and test pits at depths of 1.5 feet or less on the main RERC property. Surface materials consist of fill (6 of 29 borings) or weathered bedrock (LOR, 2004). The fill is composed of dry, loose, light brown, silty sand. Older alluvial fan deposits of Quaternary age that are mapped by the USGS (2001 and 2006) and Dibblee Jr. (2004) have been removed from the majority of the RERC site during mass grading activities that pre-date construction of the existing power plant facilities, according to the earlier geotechnical report (LOR, 2004).

Comparison of the current topographic map with contours that existed prior to construction of RERC Units 1&2 in the more recent geotechnical review report indicates that 1 to 5 feet of recently placed fill is present in the vicinity of Units 3&4 and on-site ancillary facilities (LOR, 2008). A total minimum of 1 to a total maximum of 6 feet of fill, which includes a combination of materials reported in both geotechnical reports, is therefore present in the areas if proposed new construction. Compaction testing was reportedly performed during placement of this fill, although documentation, including compaction test results and as-built grading reports, were not available for review by LOR (2008).

Water was observed at depths of 11 to 26 feet in 15 of the 29 borings. The water is not a true water table, since the site is underlain by igneous bedrock, but rather perched water stored in the rock fracture system (LOR, 2004).

FAULTING AND SEISMICITY

Energy Commission staff reviewed several geologic maps and reports for the RERC Units 3&4 area, including those for the Santa Ana 1°x2° sheet (CDMG, 1966), geologic maps of the Riverside West and Fontana 7.5' quadrangles (Dibblee, Jr., 2004; USGS, 2001), and the geologic map of the Santa Bernardino and Santa Ana 30'x60' sheets (USGS, 2006). In addition, several maps and reports addressing active faulting and seismic activity, including the “Fault Activity Map of California and Adjacent Areas” (CDMG, 1994), “Fault Rupture Hazard Zones in California” (CDMG, 1999a), the “Simplified Fault Activity Map of California” (CDMG, 2002), and “Maps of Known Active Fault Near-Source Zones in California and Adjacent Parts of Nevada” (ICBO, 1998), were consulted. Review of the SPPE application and referenced preliminary geotechnical reports (CEC, 2008a; LOR, 2004 and 2008), coupled with staff's independent research, indicate potential geologic hazards at the site are minimal.

No active or potentially active faults are known to cross the RERC Units 3&4 power plant footprint (CDMG, 2003). The closest known active (Holocene age) faults are presented in **GEOLOGY, MINERAL RESOURCES, AND PALEONTOLOGY Table 1** - Active Faults in the Project Area. EQFAULT Version 3.00, a computer program for the deterministic estimation of peak site acceleration using three-dimensional articulated planar elements (faults), was used to model these seismogenic sources (Blake, 2006). The program calculates the maximum Peak Ground Acceleration (PGA) the site would experience during an earthquake of maximum magnitude on a given fault. The attenuation relationship used was that recommended by Boore and others (1997) for Site Class C.

GEOLOGY, MINERAL RESOURCES, AND PALEONTOLOGY Table 1
Active Faults in the Project Area

Fault Name	Maximum Earthquake Magnitude	Approximate Distance from Site (miles)	Calculated Site Peak Ground Acceleration	Fault Type* (Strike)	Fault Class
Chino-Central Avenue	6.7	10.9	0.193g	RL-SS (NW)	B
Whittier Segment	6.8	11.0	0.166g	N, R, RL-SS (NW)	B
San Jacinto (San Bernardino Segment)	6.7	11.4	0.154g	RL-SS (NW)	B
Elsinore (Glen Ivy)	6.8	12.7	0.150g	RL-SS (NW)	B
San Jacinto (San Jacinto Valley Segment)	6.9	13.0	0.155g	RL-SS (NW)	B
Cucamonga	6.9	14.1	0.178g	Reverse (E-W)	A
San Andreas (Multiple Segments)	7.5-8.0	17.7	0.169g-0.220g	RL-SS (NW)	A

* RL-SS, LL-SS – Right-Lateral and Left-Lateral Strike-Slip; R – Reverse; N – Normal; BT – Blind Thrust

The estimated peak horizontal ground acceleration for the power plant site is 0.62 times the acceleration of gravity (0.62g) for bedrock acceleration based on a 2 percent probability of exceedence in 50 years, and 0.42 times the acceleration of gravity (0.42g) based on a 10 percent probability of exceedence in 50 years (USGS, 2007). The CBC (2007) requires the higher design ground acceleration for this site as determined using a 2 percent return frequency.

LIQUEFACTION, SUBSIDENCE, HYDROCOMPACTION, AND EXPANSIVE SOILS

Liquefaction is a nearly complete loss of soil shear strength that can occur during an earthquake. During the seismic event, cyclic shear stresses cause the development of excessive pore water pressure between the soil grains, effectively reducing the internal strength of the soil. This phenomenon is generally limited to unconsolidated, clean to silty sand (up to 35 percent non-plastic fines) and very soft silts lying below the ground water table. The higher the ground acceleration caused by a seismic event, the more likely liquefaction is to occur. Severe liquefaction can result in catastrophic settlements of overlying structural improvements and lateral spreading of the liquefied layer when confined vertically but not horizontally. A maximum of 6 feet of fill is present within the building footprint of the RERC Units 3&4 plant site (LOR, 2004; LOR, 2008). Since bedrock underlies the fill, and ground water is sporadic well below the fill material, liquefaction is not possible. Ground subsidence is typically caused when ground water is drawn down by irrigation activities, municipal wells, or by oil extraction, such that the effective unit weight of the soil mass is increased, which in turn increases the effective stress on underlying soils, resulting in consolidation/settlement of the underlying soils. Subsidence may also be caused by regional tectonic processes. Normally, these forms of subsidence affect a regional area so that the potential for localized differential settlement is very low. Since the RERC would continue to obtain cooling water from the Riverside WWTP subsidence at municipal wells due to ground water withdrawal for the project is not expected. Based on the shallow bedrock, subsidence is not expected to be of concern at the RERC Units 3&4 site.

Dynamic compaction of soils results when relatively unconsolidated granular materials experience vibration associated with seismic events or even large, vibrating machinery. The vibration causes a decrease in soil volume, as the soil grains tend to rearrange into a more dense state (an increase in soil density). The decrease in volume can result in settlement of overlying structural improvements. The RERC Units 3&4 plant site is locally underlain by a maximum of 6 feet of fill, which has been or would be densified according to requirements of project geotechnical reports (LOR, 2004; LOR, 2008). Treatment of previously existing and newly placed fill materials should be verified by appropriate documentation, such as compaction test results and as-built grading reports. The potential for settlement of properly compacted fill materials and granitic bedrock resulting from seismic activity (dynamic compaction) would be negligible.

Dry to moist soils can possess weak cementation that is a result of chemical precipitates accumulating under semi-arid conditions. Such cementation provides the soil with cohesion and rigidity; however, these cementing agents can be dissolved upon wetting. When they are dissolved, a substantial decrease in the material's void ratio is experienced even though the vertical pressure does not change (hydrocompaction). Materials that exhibit this decrease in void ratio and corresponding decrease in volume with the addition of water are defined as collapsible soils. Collapsible soils are typically limited to true loess, fine flash flood deposits, clayey loose sands, loose sands cemented by soluble salts, and windblown silts. Because the proposed RERC Units 3&4 plant site is characterized by a veneer of artificial fill overlying granitic bedrock, the potential for hydrocompaction (collapse) is not possible.

Soil expansion occurs when clay-rich soils, with an affinity for water, exist in-place at moisture contents below their plastic limit. The addition of moisture from irrigation, capillary tension, water line breaks, etc. causes the clay soils to collect water molecules in their structure, which, in turn, causes an increase in the overall volume of the soil. This increase in volume can correspond to movement of overlying structural improvements. As reported in the boring logs, the RERC Units 3&4 plant site is entirely underlain by igneous bedrock covered by a veneer of silty sand (non-expansive) fill (LOR, 2004). However, quality of recently placed fill materials (LOR, 2008) should be verified by appropriate documentation. The potential for expansive soils is negligible in silty sand fills and granitic bedrock.

LANDSLIDES

Landslide potential at the RERC Units 3&4 plant site is considered to be negligible. The project is to be located on a low-lying pediment underlain by igneous bedrock that is distant from steep terrain that might be subject to slope failure.

TSUNAMIS AND SEICHES

Tsunamis and seiches are earthquake-induced waves, which can inundate low-lying areas adjacent to large bodies of water. The proposed RERC Units 3&4 plant site is situated approximately 714 to 737 feet above mean sea level (LOR, 2008). The closest body of water would be the effluent ponds at the WWTP to the west. No large bodies of water are present near the plant site or associated linear facilities. As a result, the potential for tsunamis and seiches to affect the site is considered nil.

GEOLOGIC, MINERALOGIC AND PALEONTOLOGIC RESOURCES

Energy Commission staff have reviewed applicable geologic maps and reports for this area (CDC, 1982 and 2001; CDMG, 1968, 1987, 1990, 1991, 1998, and 1999b; Dibblee, Jr., 2004; USGS, 2001 and 2006). Based on this information and the information contained in the application, there are no known mineralogic resources located at or immediately adjacent to the proposed RERC Units 3&4 plant site.

The applicant’s consultant conducted a paleontologic resources field survey and a sensitivity analysis for the proposed RERC Units 3&4 (CEC, 2008a). Literature and records searches were conducted by the Natural History Museum of Los Angeles County (McLeod, 2007) and the San Bernardino County Museum (Scott, 2007) to support the consultant’s conclusions regarding paleontological sensitivity on the site. No significant fossil localities were identified at the RERC 3&4 site. The RERC 3&4 plant site lies in igneous bedrock with some areas of artificial fill up to 6 feet in thickness. There is no potential for paleontologic resources in either of these materials. Pleistocene age older alluvial fan deposits have been mapped on the RERC 3&4 site, and might be encountered beneath fill materials or above granitic bedrock (USGS, 2001; USGS, 2006). However, these sediments, which are considered to have a high paleontological sensitivity, have reportedly been removed from the majority of the RERC site during prior mass grading activities (LOR, 2004). This was verified by a registered geologist representing the California Energy Commission during a site visit for the original RERC application (Hunter, 2008). The SPPE application (CEC, 2008a) also cites the Final Paleontological Monitoring Report, which summarizes the monitoring program conducted during construction of Units 1&2 (DeBusk and Corsetti, 2006). The report confirms that Quaternary alluvial fan deposits were not present on the RERC site. The potential for encountering significant paleontological resources during construction of RERC Units 3&4 is therefore very low.

Since no fossils are known to exist on the RERC 3&4 site, and the only sedimentary unit in the area that has been assigned a “high” sensitivity rating has been documented as being removed from the RERC property, construction and long-term impacts should be minimal (CEC, 2008a; DeBusk and Corsetti, 2006). Based on the recommendations in the guidelines provided by the Society of Vertebrate Paleontology (SVP, 1995), if an area is determined to have a low potential for containing paleontologic resources, a program for mitigation and salvage is typically not required. Based on a review of available information and since locally the geologic units that may exhibit a “high” sensitivity with respect to potential paleontologic resources no longer exists on the bulk of the site, staff concludes that the proposed RERC 3&4 project has low potential to expose significant paleontologic resources locally during ground disturbance activities and, therefore, does not require a mitigation plan.

IMPACTS

The CEQA Guidelines Appendix G provides a checklist of questions that a lead agency should normally address if relevant to a project’s environmental impacts.

- Section (V) (c) asks if the project will directly or indirectly destroy a unique paleontological resource or site or unique geological feature.
- Sections (VI) (a), (b), (c), (d), and (e) pose questions that are focused on whether or not the project would expose persons or structures to geologic hazards.
- Sections (X) (a) and (b) pose questions about the project’s effect on mineral resources.

The “Measures for Assessment and Mitigation of Adverse Impacts to Non-renewable Paleontologic Resources: Standard Procedures” (SVP, 1995) is a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources. They were adopted in October 1995 by the SVP, a national organization of professional scientists.

Following is the Environmental Checklist that identifies potential impacts in this issue area. Below the checklist is a discussion of each impact, and an explanation of the impact conclusion.

GEOLOGY, MINERAL RESOURCES, AND PALEONTOLOGY Table 2
Environmental Checklist

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
GEOLOGY - Would the project:				
A. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving				
I. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
II. Strong seismic ground shaking?		X		
III. Seismic-related ground failure, including liquefaction?		X		
IV. Landslides?				X
V. Inundation by seiche, tsunami or mudflow?				X
B. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, collapse, or the loss of topsoil?		X		
C. Be located on expansive soil.				X*
MINERAL RESOURCES - Would the project:				
A. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
B. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
PALEONTOLOGICAL RESOURCES - Would the project:				
A. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				X
* Pending verification of quality of recently placed fill.				

DISCUSSION OF IMPACTS

Geology

A. Risk of Loss, Injury, or Death from Geologic Hazards: Less than Significant with Mitigation Incorporated

I. Rupture of Known Earthquake Fault: No Impact

The proposed Riverside Energy Resource Center Units 3&4 plant site is not located on or across an active fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Maps issued by the State Geologist.

II. Strong Seismic Ground Shaking: Less than Significant with Mitigation Incorporated

The RERC Units 3&4 project would be designed and constructed to conform to the CBC (2007) requirements for a horizontal peak ground acceleration value of at least 0.62g. The CBC is the design standard used for most structures in California, from single family homes to high rise buildings. This design standard functions as the mitigation for potential ground shaking. Design requirements within the CBC are intended to mitigate the effects of ground shaking on the structure to a tolerable level. While the structure itself may be badly damaged, the damage should not be so severe as to present a life or safety hazard to its occupants.

III. Seismic Ground Failure or Liquefaction: Less than Significant Impact with Mitigation Incorporated

The site is located on unsaturated granular fill materials and granitic bedrock which are not subject to liquefaction. Since any uncontrolled, unconsolidated fill that may be present on the site would be densified per requirements in the project geotechnical reports, dynamic compaction resulting from an earthquake is not likely to occur (LOR 2004; LOR 2008).

IV. Landslides: No Impact

Since the project facilities are located on a flat area, landslides are not considered to be a potential impact.

V. Inundation by Seiche, Tsunami or Mudflow: No Impact

Since the project facilities are located a significant distance from the Pacific Ocean or any significant body of water damage due to seiche, tsunami or mudflow is not considered to be a potential impact.

B. Unstable Soils: Less Than Significant with Mitigation Incorporated

The RERC Units 3&4 site is underlain by a maximum of 6 feet of silty sand fill. Since any unstable fill that may be present on the site would be densified, or removed and replaced with engineered structural fill, per requirements in the project geotechnical report, subsidence or differential settlement due to liquefaction, dynamic compaction, or hydrocompaction is not likely to occur (LOR 2004; LOR 2008). The igneous bedrock beneath the fill is considered to be a stable subgrade material.

C. Expansive Soils: No Impact

No expansive soils have been documented during site investigations or construction on this silty sand fill and bedrock site (LOR 2004; LOR 2008). However, the quality of fill recently placed for the construction of Units 1&2 should be verified to ensure that no expansive material was incorporated during placement.

Mineral Resources

A. Loss of Mineral Resources: No Impact

There are no known geological or mineralogical resources located at or immediately adjacent to the existing RERC Units 3&4 plant site.

B. Loss of Identified Mineral Resource Recovery Sites: No Impact

There are no known geological or mineralogical resources recovery sites located at or immediately adjacent to the existing RERC plant site or the linear facilities.

Paleontology

A. Destruction of Paleontological Resource or Geologic Feature: No Impact

Based upon the literature and records searches and field surveys performed for the entire RERC site, and the results of paleontological monitoring program performed during construction of the adjacent RERC Units 1&2, the Applicant has proposed that monitoring and mitigation measures to be followed during the construction of the RERC Units 3&4 are not required. Energy Commission staff agrees with the applicant that, given the documented absence of the only highly sensitive geologic unit mapped in the area (Pleistocene older alluvium), the potential to encounter any fossils of scientific significance during project construction is low. No potential impacts are expected related to plant operation.

CUMULATIVE IMPACTS

The existing RERC Units 3&4 site lies in an area that exhibits minimal geologic hazards and no known geologic or mineralogic resources. Pleistocene alluvium, which is mapped on the site and exhibits a high paleontological sensitivity, has reportedly been removed from the bulk of the site during prior mass grading activities (USGS 2001 and 2006; LOR 2004; DeBusk and Corsetti, 2006). The remaining natural geologic units that underlie the site, which are limited to igneous bedrock and artificial fill, do not have a potential to contain significant paleontological resources. Based on this information and compliance with the CBC (2007) and recommendations in a project specific geotechnical report, it is staff's opinion that the potential for significant adverse cumulative impacts to the project from geologic hazards, and to potential geologic, mineralogic, and paleontologic resources from the proposed project is low.

RESPONSE TO PUBLIC AND AGENCY COMMENTS

No comments on geology and paleontology have been received for the RERC Units 3&4 project.

CONCLUSION AND RECOMMENDATIONS

Staff research verifies that the project would have no impacts to mineral or other geologic resources. Although the site lies in an area with significant geologic hazards, these hazards would be mitigated by project design in accordance with the requirements of the current California Building Code (CBC, 2007). Highly sensitive Pleistocene alluvium has reportedly been removed from the site. The project would have no potential to impact significant paleontological resources in remaining fill and granitic bedrock.

PROPOSED CONDITIONS OF EXEMPTION

There is no potential to impact significant paleontological resources on the site. Any potential impacts due to geologic hazards would be mitigated by complying with requirements of the CBC (2007) and recommendations in a design-level geotechnical report. Therefore, staff proposes no conditions of exemption.

REFERENCES

DeBusk, J. and Corsetti, C. 2006. *Final Paleontological Monitoring Report for the Riverside Energy Resource Center, Riverside, Riverside County, California*; Prepared by SWCA Environmental Consultants; Project Number 7468. Submitted to Powers Engineers, May 30, 2006.

Blake, T.F. 2006. EQFAULT Version 3.00, *A Computer Program for the Deterministic Estimation of Peak Acceleration Using Three-Dimensional California Faults as Earthquake Sources*, http://thomasfblake.con/eqfault.htm.

Boore, D. M., W. B. Joyner, and T. E. Fumal. 1997. "Equations for Estimating Horizontal Response Spectra and Peak Ground Acceleration from Western North American Earthquakes: A Summary of Recent Work"; *Seismological Research Letters*, Volume 68, Number 1, p. 128-153.

CBC (California Building Code).2007.

CDC (California Department of Conservation), 2001. *Oil, Gas, and Geothermal Fields in California.*

CDC. 1982. *Oil & Gas Prospect Wells Drilled in California Through 1980.* Publication No. TR01, Second Edition.

CDMG (California Division of Mines and Geology). 2003. *Fault Investigation Reports for Development Sites Within Alquist-Priolo Earthquake Fault Zones in Southern California, 1974-2000.*

CDMG. 2002. *Simplified Fault Activity Map of California*, Map Sheet 54.

CDMG. 1999a. *Fault-Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning with Index to Earthquake Fault Zones Maps.* Special Publication 42.

CDMG. 1999b. *Mines and Mineral Producers Active in California (1997–1998).* Special Publication 103.

CDMG. 1998. *Gold Districts of California*, Sesquicentennial Edition, California Gold Discovery to Statehood. Bulletin 193.

CDMG. 1994. *Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions, Scale: 1:750,000.*

CDMG. 1991. *Mineral Land Classification of the Temescal Valley Area, Riverside County, California*. Special Report 165.

CDMG. 1990. *Industrial Minerals in California: Economic Importance, Present Availability, and Future Development*. Special Publication 105, reprinted from U.S. Geological Survey Bulletin 1958.

CDMG. 1987. *Mineral Land Classification of the Greater Los Angeles Area, Part VII, San Bernardino Production-Consumption Region*. Special Report 143.

CDMG. 1968. *Map of Riverside County, California Showing Locations of Mines and Mineral Resources.* Open-File Report 68-7.

CDMG. 1966. *Geologic Map of California, Santa Ana Sheet.* Scale 1:250,000.

CEC, 2008a – CEC/M. Jones (tn45678) Application for Certification of an SPPE dated 3/19/08. Submitted to Dockets 3/19/08.

Dibblee, Jr., T.W. 2004. *Geologic Map of the Riverside West/South ½ of Fontana Quadrangles, San Bernardino and Riverside County, California*. Dibblee Geology Center Map #DF-128.

Elders, W.A. 1979. *The Geological Background of the Geothermal Fields of the Salton Trough*, in Geology and Geothermics of the Salton Trough, Geological Society of America 92nd Annual Meeting, San Diego, p. 1-19.

Hunter, Dr. Dal, Black Eagle Consulting, Inc. Personal Communication August, 2008.

IBC (International Building Code). 2006.

ICBO (International Conference of Building Officials), 1998. *Map of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada.*

LOR Geotechnical Group, Inc. (LOR). 2004. *Geotechnical Investigation, Acorn Generation Project, Northern Terminus of Acorn Street, Riverside, California, Project No. 61833.1*. Prepared for Powers Engineers, January 21, 2004.

LOR. 2008. *Preliminary Geotechnical Review Report on the Existing Site Conditions, Riverside Energy Resource Center Expansion of RERC Units 3&4, Riverside, California, Project No. 61833.13.* Prepared for Powers Engineers, January 18, 2008.

McLeod, S.A. 2007. *Unpublished paleontological resources report*, Natural History Museum of Los Angeles County, Los Angeles, California. 2 p.

Norris, R.M. and Webb, R.W., 1990, *Geology of California: John Wiley and Sons, Inc., New York.*

Scott, E. 2007. *Unpublished paleontological literature and records review*, San Bernardino County Museum, Redlands, California. 4 p.

SVP (Society of Vertebrate Paleontology). 1995. *Measures for Assessment and Mitigation of Adverse Impacts to Non-renewable Paleontologic Resources: Standard Procedures*, Vol. 163, pp. 22-27.

SVP 1995. *Conditions of Receivership for Paleontologic Salvage Collections: Society of Vertebrate Paleontology News Bulletin,* Vol. 166, p. 31-32.

United States Geological Survey (USGS). 2007. *Seismic Hazard Curves and Uniform Hazard Response Spectra,* Version 5.0.8, November 20, 2007.

USGS. 2006. *Geologic Map of the San Bernardino and Santa Ana 30'x60' Quadrangles, California*. Open-File Report 2006-1217.

USGS. 2001. *Geologic Map of the Riverside West 7.5' Quadrangle, Riverside County, California,* Version 1.0, Open-File Report 01-451.

HAZARDOUS MATERIALS MANAGEMENT

Testimony of Alvin J. Greenberg, Ph.D. and Rick Tyler

INTRODUCTION

This section provides a discussion of staff's evaluation of the potential impacts of the proposed Riverside Energy Resource Center Units 3 & 4 (the Project) associated with the handling of hazardous materials. Energy Commission staff's objective is to ensure that there will be no significant adverse impacts attributed to materials use or hazardous conditions during project construction, operation and closure. Energy Commission staff has determined that all California Environmental Quality Act (CEQA) checklist items for hazardous materials are either "less than significant impact" or "no impact." A brief hazards and hazardous materials overview of the project is provided, as are comments regarding selected CEQA checklist items with respect to hazards and hazardous materials. The section concludes with staff's proposed conditions of exemption.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

The following federal, state, and local laws, ordinances, regulations, and standards (LORS) apply to the protection of public health and hazardous materials management. Staff's analysis examines the project's compliance with these requirements.

HAZARDOUS MATERIALS MANAGEMENT Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
The Superfund Amendments and Reauthorization Act of 1986 (42 United States Code (USC) §9601 et seq.)	Contains the Emergency Planning and Community Right To Know Act (also known as SARA Title III)
The Clean Air Act (CAA) of 1990 (42 USC 7401 et seq. as amended)	Establishes a nationwide emergency planning and response program and imposes reporting requirements for businesses which store, handle, or produce significant quantities of extremely hazardous materials.
The CAA section on Risk Management Plans (42 USC §112(r)	Requires the states to implement a comprehensive system to inform local agencies and the public when a significant quantity of such materials is stored or handled at a facility. The requirements of both SARA Title III and the CAA are reflected in the California Health and Safety Code, section 25531, et seq.

Applicable Law	Description
49 Code of Federal Regulations Parts 172-800 (49 CFR 172-800)	U.S. Department of Transportation (U.S. DOT) requirement that suppliers of hazardous materials prepare and implement security plans.
49 CFR Part 1572, Subparts A and B	Requires suppliers of hazardous materials to ensure that all their hazardous materials drivers are in compliance with personnel background security checks.
The Clean Water Act (CWA) (40 CFR 112)	Aims to prevent the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Requires a written Spill Prevention, Control, and Countermeasures (SPCC) plan to be prepared for facilities that store oil that my leak into navigable waters.
29 USC 651; 29 CFR sections 1910 and 1926	Requires hazardous materials communications and emergency response compliance.
State	
The California Health and Safety Code, section 25534 and Title 19, Cal Code Regs. Section 2770.5	Directs facility owners, storing or handling regulated substances (formerly called “acutely hazardous materials”) in reportable quantities, to develop a Risk Management Plan (RMP) and submit it to appropriate local authorities, the United States Environmental Protection Agency (EPA), and the designated local administering agency for review and approval.
The California Health and Safety Code, Ch. 6.95 Sections 25500 – 25545	Requires preparation of a Hazardous Materials Business Plan (HMBP) including a hazardous materials inventory if materials are handled or stored above certain threshold amounts.
Aboveground Petroleum Storage Act (California H&S Code Ch. 6.5 Sections 25270 – 25270.13	Requires a preparation of an SPCC plan if aboveground petroleum storage tanks exceed certain threshold amounts.
The California Health and Safety code, Ch. 6.5 Sections 25100 – 25250.28	Control and regulate the storage, treatment, and disposal of hazardous wastes including used oil.
Title 8, Cal. Code Regs., Section 5189	Requires facility owners to develop and implement effective safety management plans to insure that large quantities of hazardous materials are handled safely. While such requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the RMP process.

Applicable Law	Description
California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)	Prevents certain chemicals that cause cancer and reproductive toxicity to be discharged into sources of drinking water.
Local	
Ordinance No. 615.3 Hazardous Waste	Requires facilities that generate hazardous waste to report to the County of Riverside Health Services Agency Department of Health and obtain a permit.
Ordinance No. 615.3 Hazardous Materials	Requires facilities that handle hazardous materials to obtain a permit from the Department of Health and to develop a Business Emergency Plan.
Ordinance No. 617.4 Underground Tanks	Requires a permit for underground storage tanks containing hazardous substances.

The Certified Unified Program Authority (CUPA) with responsibility to review RMPs and Hazardous Materials Business Plans is the Riverside County Community Health Agency, Department of Environmental Health (CEC 2008a Section 6.14.6). In regards to seismic safety issues, the site is located in Seismic Risk Zone 4. Construction and design of buildings and vessels storing hazardous materials will meet the seismic requirements of California Code of Regulations, Title 24 and 2001 California Building Code as well as the 2007 California Building Standards Code (CEC 2008a Section 6.5.1.1).

SETTING

The proposed project would consist of two aero-derivative natural gas combustion turbine generators (Units 3&4) capable of producing a total of 95 megawatts and occupying about 2.2 acres in the City of Riverside, California. The property is located on Jurupa Avenue, immediately north of the existing Riverside Energy Resource Center Units 1&2 (CEC 2008a Section 6.14.1). The site consists of land zoned Business/Office Park and the surrounding area is zoned Business and Manufacturing Park, General Industrial, Airport Industrial, and Open Space (RERC 2008a Section 6.2.1.3). See the Project Description section of this assessment for more details.

Natural gas would be supplied to the Project from an existing Southern California Gas metering station on-site (CEC 2008a Section 2.6). Aqueous ammonia will be used in the selective catalytic reduction (SCR) process to convert the NO_x into nitrogen and water vapor. Aqueous ammonia for the Project (19 percent ammonia in aqueous solution) will be stored in an existing 12,000-gallon aboveground storage tank that currently serves RERC Units 1&2. A number of other hazardous chemicals will also be used in small quantities (CEC 2008a Table 6.14-2).

IMPACTS

Following is the Environmental Checklist that identifies potential impacts in this issue area. Below the checklist is a discussion of each impact, and an explanation of the impact conclusion.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
HAZARDS AND HAZARDOUS MATERIALS – Would the project:				
A. Create a significant hazard to the public or the environment through the routine transport or use of hazardous materials?			**X**	
B. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			**X**	
C. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				**X**
D. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				**X**
E. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?			**X**	
F. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				**X**
G. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				**X**
H. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				**X**
I. Exceed an applicable LRDP or Program EIR standard of significance?				**X**
PUBLIC SERVICES – Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered facilities, the construction of which could cause significant environmental impacts, or result in an inability to maintain acceptable service ratios, response times, or other performance objectives for the following:				
J. Impact on Fire Protection Services?				**X**

DISCUSSION OF IMPACTS

The basis for the impact determinations in the checklist is discussed below.

A. Transport or Use of Hazardous Materials: Less than Significant Impact

Several hazardous materials are proposed for storage and use during the construction of the project and for routine plant operation and maintenance. A list of the hazardous materials to be used during operation of the Project is included in Table 6.14-2 of the application for Small Power Plant Exemption (SPPE) and reproduced in Appendix A of this section. Lubricants, hydraulic oils, laboratory reagents, detergents, and relatively small amounts of water treatment chemicals, paints and solvents will be used and stored on-site. The project will be limited to the use and storage of these chemicals as per proposed Condition of Exemption **HAZ-1**. Any impact of spills or other releases of these materials will be limited to the site due to the small quantities involved, the infrequent use and hence reduced chances of release, and/or the temporary containment berms used by contractors (CEC 2008a Section 6.14.5.2).

The project proposes to use natural gas for fuel and aqueous ammonia for catalytic reduction of NOx emissions. The use of these materials is addressed below. The hazard characteristics of ammonia and natural gas and their use in substantial amounts during the operation of the Project pose the principal risk of off-site impacts. The potential threats from the other hazardous materials are not as significant as they are to be stored, handled or used for routine purposes in relatively smaller quantities at the facility and also have lower toxicity and/or environmental mobilities.

Aqueous Ammonia

Based on the discussion above, aqueous ammonia is one of the two hazardous materials that may pose a risk of off-site impacts. Aqueous ammonia (19%) will be used in controlling the emission of oxides of nitrogen (NOx) from the combustion of natural gas. Aqueous ammonia would be stored in an existing 12,000 gallon above-ground storage tank. Protective equipment installed at the existing ammonia storage facility include a secondary containment structure capable of holding 100 percent of the tank capacity plus 10 percent to accommodate the rainfall associated with a 24-hour 25-year storm, vapor detectors and alarms, a vapor equalizer, vent, vacuum breaker, and a pressure relief valve to prevent vapor accumulation. The operation of the proposed RERC Units 3&4 would not increase the amounts of ammonia currently stored on-site for Units 1&2 (CEC 2008a Sections 6.14.1.1 and 6.14.5.2, and RERC 2008d, Data Response #38). Furthermore, the project will be required to update their Hazardous Materials Business Plan by proposed Condition of Exemption **HAZ-2**.

Risk from Hazardous Materials Transportation

Aqueous ammonia would be transported to the proposed facility in tanker trucks with maximum capacity of 6,000 gallons. Peak operation of the proposed Project (at 1230 permitted hours per turbine per year) would result in a maximum of five ammonia deliveries per year (RERC 2008d Data Response #33). The ammonia would be delivered from a supplier located only 0.4 miles away from the proposed site and the transportation route would be west from Wilderness Avenue along Jurupa Avenue, then north on Payton Avenue to the project site (RERC 2008d Data Response #32). There are no sensitive receptors including schools, day care facilities, hospitals, long-term health care facilities, parks, or playgrounds along the hazardous materials transportation route (RERC 2008d Data Response #32, Attachment 1).

Staff believes that it is appropriate to rely on the extensive regulatory program that applies to shipment of hazardous materials on California highways to ensure safe handling in general transportation (see the Federal Hazardous Materials Transportation Law [49 U.S.C. §5101 et. seq.], the U.S. Department of Transportation Regulations [49 C.F.R. Subpart H, §172-700], the U.S. Department of Homeland Security Regulations [49 C.F.R. Parts 1570 and 1572], and California Department of Motor Vehicles (DMV) Regulations on Hazardous Cargo). These regulations also address the issues of driver competence and security threat assessment. Through this regulatory program, risks from transportation have been reduced to levels that are as low as reasonably practical. In addition, the low frequency of deliveries required for this Project and the short delivery route further reduce potential impacts associate with ammonia transportation.

Site Security for Hazardous Materials

The applicant proposes to use hazardous materials identified by the U.S. EPA as requiring the development and implementation of special site security measures to prevent unauthorized access. The energy generation sector is one of 14 areas of critical infrastructure listed by the U.S. Department of Homeland Security (DHS). On November 2, 2007, the U.S Department of Homeland Security published in the Federal Register (6 CFR Part 27) implemented an interim final rule requiring that facilities that use or store certain hazardous materials conduct vulnerability assessments and implement certain specified security measures. While the rule applies to aqueous ammonia solutions of 20 percent or greater and this proposed facility plans to utilize a 19 percent aqueous ammonia solution, staff believes that all power plants under the jurisdiction of the Energy Commission should implement a minimum level of security consistent with CEC, industry, and DHS guidelines.

Staff conducted a site visit and was briefed by the applicant on the existing security plan and measures. Staff concluded that the existing perimeter and other site security measures utilized at this facility were excellent and in conformance with the North American Electric Reliability Council's (NERC) 2002 guidelines, the U.S. DOE VAM-CF model, and the U.S. Department of Homeland Security regulations. Staff therefore determined that this project does not need to take any additional action regarding security.

Natural Gas

The primary fuel source for the proposed project is natural gas. Natural gas poses a fire and/or explosion risk as a result of its flammability. While natural gas will be used in significant quantities, it will not be stored on site. The risk of a fire and/or explosion from natural gas can be reduced to insignificant levels through adherence to applicable codes and the development and implementation of effective safety management practices. The NFPA Code 85A requires: 1) the use of double-block and bleed valves for gas shut-off; 2) automated combustion controls; and 3) burner management systems (NFPA 1987). These measures significantly reduce the likelihood of an explosion in gas-fired equipment. Additionally, facility start-up procedures require air purging of the gas turbines prior to start-up, thus precluding the presence of an explosive mixture.

The proposed project would tap into an existing gas metering station on-site and would not require the installation of a new pipeline. Three new gas compressors would be installed as part of the Project to provide adequate gas pressure for Units 3&4 (CEC 2008a Section 2.6).

B. Accidental Release of Hazardous Materials: Less than Significant Impact

Aqueous ammonia is being proposed for use in controlling NO_x emissions created during the combustion of natural gas at the proposed Project. To assess the potential impacts associated with a potential release of ammonia, staff typically evaluates where four “bench mark” exposure levels of ammonia gas occur off-site. These exposure levels include: 1) the lowest concentration posing a risk of lethality, 2,000 PPM; 2) the Immediately Dangerous to Life and Health (IDLH) level of 300 PPM; 3) the Emergency Response Planning Guideline (ERPG) level 2 of 150 PPM, which is also the Risk Management Planning (RMP) level 1 criterion used by EPA and California; and 4) the level considered by the Energy Commission staff to be without serious adverse effects on the public for a one-time accidental exposure of 75 PPM. (A detailed discussion of the exposure criteria considered by staff and their applicability to different populations and exposure-specific conditions is provided in Appendices B and C of this analysis.)

Staff considers the exposure level of 75 PPM to be de minimus. If the potential exposure associated with a potential release does not exceed 75 PPM at any public receptor, staff will presume that the potential release does not pose a risk of significant impact. If the potential exposure associated with a potential release does exceed 75 PPM at any public receptor, staff may assess the potential exposure levels and/or the nature of the potentially exposed population in combination with the probability of occurrence of the release. Based on such analysis, staff will evaluate the likelihood and extent of potential exposure and make a recommendation regarding its potential impact and acceptability.

To gauge the significance level of potential impacts to public receptors from a proposed facility, staff uses the internationally accepted and generally used societal risk criteria, *(SR),* equal to 10^{-4} fatalities per year. Societal risk is defined as the product of the estimated annual frequency of the incident *(F)* multiplied by the estimated number of fatalities resulting from the incident *(N)* (AIChE 1989). As an example, a societal risk level of 10^{-4} would result from an event with an expected annual frequency, or the annual probability of occurrence, of 10^{-6}, that has a potential for up to 100 fatalities, ($SR = 10^{-6} \times 100 = 10^{-4}$). This level of risk could also be described as 100 expected fatalities per million years, or equivalently, as 1 expected fatality per 10,000 years.
For cases where the societal risk falls below 1×10^{-4} fatalities per year, the risk is considered acceptable considering the societal benefits associated with a sufficient

and reliable energy supply and no further mitigation is recommended. For cases where the societal risk is greater than 1 x 10^{-4}, but less than 1 x 10^{-1}, the risk may either be deemed acceptable, or, further risk reduction may be required, depending on the level of risk found and the feasibility of further mitigation. For cases were societal risk is found to be greater than 1 x 10^{-1} without mitigation, the risk is generally considered to be unacceptable.

Staff reviewed the applicant's proposal to use aqueous ammonia. Design features have been incorporated into the project to keep potential impacts below a level of significance, as described in Section A, above (Transport or Use of Hazardous Materials). Workers at the site will be properly equipped and trained to prevent and respond to accidental release of any hazardous materials. The amounts of ammonia currently stored on-site for Units 1&2 would not be increased for the proposed Project and therefore no additional hazard would be associated with the storage of ammonia for Units 3&4 (CEC 2008a Section 6.8.3). The applicant has stated that the response plan and mitigation measures currently in place for Units 1&2 would be modified to include Units 3&4 and that the use of aqueous ammonia would not result in a significant impact on the public or the environment (CEC 2008a Sections 6.8.3 and 6.14.5.2).

The applicant conducted a worst-case scenario offsite consequence analysis in 2005 for the ammonia storage tank installed for Units 1&2, which is included in Appendix 6.8-A of the SPPE (CEC 2008a). The worst case hypothetical situation is the release of the full 12,000-gallon storage tank of aqueous ammonia into the secondary containment area (with a surface area of 750 ft^2), due to a catastrophic event. The applicant's analysis found that modeled concentrations of ammonia exceeding the toxic endpoint of 200 ppm (the former ERPG-2 level at the time) would extend 0.2 miles. This level occurs beyond the facility fenceline, however no public receptors are present in the impacted region (CEC 2008a Appendix 6.8-A and RERC 2008d Data Response #32, Attachment 1). Staff determined that the OCA modeling was conducted appropriately and the results were consistent with that found at other locations where staff has conducted its own independent modeling.

Based on staff's conclusions above, the potential impact from an accidental release of hazardous materials will be less than significant.

C. Emission or Handling Hazardous Substances near a School: No Impact

There are no schools, hospitals, or other sensitive receptors within 3000 feet of the project site (CEC 2008a Section 6.8.1.1 and Appendices 6.8-B/6.8-C). Therefore, there is no risk of a hazardous plume causing an off-site impact.

D. Site Listed as Hazardous: No Impact

The proposed RERC Units 3&4 Project is not located on a hazardous waste site.

E. Airport Hazard Area: Less than Significant Impact

The Riverside Municipal Airport is located approximately one mile south of the project site (CEC 2008a Figure 6.2-1). Since staff has determined that potential impacts from the use or storage of hazardous materials at the proposed Project would be less than significant, and modeling results show that a catastrophic release of ammonia from the project's storage tank would not result in significant impacts offsite into the surrounding area, impacts at the airport would be even lower and therefore impacts at the airport would also be less than significant.

F. Private Airstrip Hazard Area: No Impact

There are no private airstrips in the vicinity of the project. Therefore, there are no impacts anticipated to a private airstrip.

G. Impair Emergency Response Plan: No Impact

It appears that the construction and operation of the project would improve upon the reliability of the local power system and therefore benefit the local emergency response capabilities. No interference with emergency response plans or emergency evacuation plans is anticipated.

H. Exposure to Wildland Fires: No Impact

The proposed Project will be built on land that is part of a 16-acre site that is located in an industrial part of the City of Riverside. This site and the surrounding area are clear of substantial vegetation. Therefore there will be no impact from exposure to wildlife fires.

I. Exceed an applicable Long Range Development Plan (LRDP) or Program EIR standard of significance: No Impact

The site is consistent with the applicable LRDP and EIR plans.

J. Impact on Fire Protection Services: No Impact

The Project site would not store large volumes of fuel or flammable materials. Although natural gas is used as a fuel, it is not stored on-site, resulting in an insignificant risk of fire or explosion. The fire protection system will comply with the Uniform Fire Code and NFPA standards (RERC 2008d Data Response #35, Attachment 3). The City of Riverside Fire Department will be responsible for responding to any fire emergencies. Compliance with applicable LORS, existing safeguards, and staff's conditions of exemption will ensure that local fire protection services are not impacted.

Worker Safety

Construction and operation of the proposed Project will comply with all applicable LORS relating to worker health and safety. Comprehensive training programs will be implemented to ensure the protection of worker safety and health and minimize potential injuries and accidents. The applicant will implement Health and Safety Programs for both construction and routine operations. These programs will include an Injury and Illness Prevention Program, a Fire Prevention Program, a Personal Protective Equipment Program, and an Emergency Response Plan. The applicant has stated that appropriate safety programs would be updated to address health and safety issues at the proposed Project (CEC 2008a Section 6.14.1.1).

- Staff agrees that these programs are necessary but has proposed four (4) additional conditions of exemption to ensure worker safety during construction and operations.

Staff believes that the project owner should provide a Project Construction Safety and Health Program and a Project Operations and Maintenance Safety and Health Program as required by Conditions of Exemption **HAZ -3**, and **-4**

Assuring safety and health in construction is complex, involving short-term work sites, changing hazards, and multiple operations and crews working in close proximity and these hazards increase in complexity in the multi-employer work sites typical of large complex industrial-type projects such as the construction of gas-fired power plants. In order to reduce and/or eliminate these hazards, it has become standard industry practice to hire a Construction Safety Supervisor to ensure a safe and healthful environment for all personnel. This has been evident in the audits of power plants under construction recently conducted by the staff.

To date, there are no OSHA or Cal/OSHA requirements that an employer hire or provide for a Construction Safety Officer. OSHA and Cal/OSHA regulations do, however, require that safety be provided by an employer and the term "Competent Person" is used in many OSHA and Ca/-OSHA standards, documents, and directives. A "Competent Person" is usually defined by OSHA as an individual who, by way of training and/or experience, is knowledgeable of standards, is capable of identifying workplace hazards relating to the specific operations, is designated by the employer, and has authority to take appropriate action. Therefore, in order to meet the intent of the OSHA standard to provide for a safe workplace during power plant construction, staff proposes Condition of Exemption **HAZ-5,** which would require the applicant/project owner to designate and provide for a power plant site Construction Safety Supervisor.

As discussed above, the hazards associated with the construction industry are well documented. These hazards increase in complexity in the multi-employer work sites typical of large complex industrial-type projects such as the construction of gas-fired power plants. Accidents, fires, and a worker death have occurred at Energy Commission-certified power plants in the recent past due to the failure to recognize and control safety hazards and the inability to adequately supervise compliance with occupational safety and health regulations. Safety problems have been documented by Energy Commission staff in safety audits conducted in 2005 at several power plants under construction. In order to reduce and/or eliminate these hazards, it is necessary for the Energy Commission to have a professional Safety Monitor on site to track compliance with Cal/OSHA regulations and periodically audit safety compliance during construction, commissioning, and the hand over to operational status. These requirements are outlined in Condition of Exemption **HAZ-6**. A Safety Monitor, hired by the project owner yet reporting to the Chief Building Official of the Riverside County Community Health Agency, Department of Environmental Health, will serve as an extra set of eyes to ensure that safety procedures and practices are fully implemented at all power plants certified or exempted by the Energy Commission. During the audits conducted by staff, most site safety professionals welcomed the audit team and actively engaged the team in questions about its findings and recommendations. These safety professionals recognized that safety requires continuous vigilance and that the presence of an independent audit team provided a fresh perspective of the site.

CUMULATIVE IMPACTS

The primary potential cumulative effect would require consideration of the possibility that any one chemical release from the site would create an additive risk to the public when combined with other releases from surrounding chemical-use facilities. The applicant has stated that employees at the proposed Project would be trained and equipped to prevent and respond appropriately to leaks of hazardous materials and therefore off-site impacts would be less than significant (CEC 2008a Section 6.14.5.2). Thus, the Project will not result in any significant cumulative impacts associated with hazardous materials.

The workers will also be properly trained and fire detection and suppression procedures and measures will ensure that impacts to workers and the local fire department will be insignificant.

CONCLUSIONS

By incorporating the appropriate conditions of exemption, below, the routine use of hazardous materials and the construction and operation of the Project will not result in significant impacts to the public, the workers, the local fire department, or the environment.

Staff concludes that the Project will result in less than significant direct or cumulative hazardous materials, worker safety, and fire protection impacts to the environment including an environmental justice population.

PROPOSED CONDITIONS OF EXEMPTION

HAZ-1 The project owner shall not use any hazardous material not listed in Appendix A below unless approved in advance by the Riverside County Community Health Agency, Department of Environmental Health.

Verification: The project owner shall provide to the Riverside County Community Health Agency, Department of Environmental Health, in the Annual Compliance Report, a list of hazardous materials contained at the facility that are used in the new equipment installed as part of the project, in reportable quantities.

HAZ-2 The project owner shall update the existing Business Plan and submit to the local Certified Unified Program Agency (CUPA), the Riverside County Community Health Agency, Department of Environmental Health.

Verification: At least 60 days prior to first receiving any hazardous material on the Project Site, the project owner shall provide a copy of a final Business Plan to the Riverside County Community Health Agency, Department of Environmental Health.

HAZ-3 The project owner shall submit to the Riverside County Community Health Agency, Department of Environmental Health. a copy of the Project Construction Safety and Health Program containing the following:

- a Construction Personal Protective Equipment Program;
- a Construction Exposure Monitoring Program;
- a Construction Injury and Illness Prevention Program;
- a Construction Emergency Action Plan; and
- a Construction Fire Prevention Plan.

The Personal Protective Equipment Program, the Exposure Monitoring Program, and the Injury and Illness Prevention Program shall be submitted to the Riverside County Community Health Agency, Department of Environmental Health for review and approval concerning compliance of the programs with all applicable Safety Orders. The Construction Emergency Action Plan and the Fire Prevention Plan shall be submitted to the Riverside Fire Department for review and comment prior to submittal to the Riverside County Community Health Agency, Department of Environmental Health for approval.

Verification: At least 30 days prior to the start of construction, the project owner shall submit to the Riverside County Community Health Agency, Department of Environmental Health for review and approval a copy of the Project Construction Safety and Health Program. The project owner shall provide a copy of a letter to the Riverside County Community Health Agency, Department of Environmental Health from the Riverside Fire Department stating the Fire Department's comments on the Construction Fire Prevention Plan and Emergency Action Plan.

HAZ-4 The project owner shall submit to the Riverside County Community Health Agency, Department of Environmental Health a copy of the Project Operations and Maintenance Safety and Health Program containing the following:

- an Operation Injury and Illness Prevention Plan;
- an Emergency Action Plan;
- a Hazardous Materials Management Program;
- an Operation Fire Prevention Program (8 CCR § 3221); and
- a Personal Protective Equipment Program (8 CCR §§ 3401-3411).

The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the Riverside County Community Health Agency, Department of Environmental Health for review and comment concerning compliance of the programs with all applicable Safety Orders. The Operation Fire Prevention Plan, the Hazardous Materials Management Program, and the Emergency Action Plan shall also be submitted to the Riverside Fire Department for review and comment.

Verification: At least 30 days prior to the start of first-fire or commissioning, the project owner shall submit to the Riverside County Community Health Agency, Department of Environmental Health for approval a copy of the Project Operations and Maintenance Safety and Health Program. The project owner shall provide a copy of a letter to the Riverside County Community Health Agency, Department of Environmental Health from the Riverside Fire Department stating the Fire Department's comments on the Operations Fire Prevention Plan and Emergency Action Plan.

HAZ-5 The project owner shall provide a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of power plant construction activities and relevant laws, ordinances, regulations, and standards; is capable of identifying workplace hazards relating to the construction activities; and has authority to take appropriate action to assure compliance and mitigate hazards. The CSS shall:

- have overall authority for coordination and implementation of all occupational safety and health practices, policies, and programs;
- assure that the safety program for the project complies with Cal/OSHA and federal regulations related to power plant projects;
- assure that all construction and commissioning workers and supervisors receive adequate safety training;
- complete accident and safety-related incident investigations and emergency response reports for injuries and inform the Riverside County Community Health Agency, Department of Environmental Health of safety-related incidents; and
- assure that all the plans identified in Conditions of Certification Worker Safety-1 and -2 are implemented.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the Riverside County Community Health Agency, Department of Environmental Health the name and contact information for the Construction Safety Supervisor (CSS). The contact information of any replacement (CSS) shall be submitted to the Riverside County Community Health Agency, Department of Environmental Health within one business day.

The CSS shall submit in a Monthly Compliance Report a monthly safety inspection report to include:

- record of all employees trained for that month (all records shall be kept on site for the duration of the project);
- summary report of safety management actions and safety-related incidents that occurred during the month;
- report of any continuing or unresolved situations and incidents that may pose danger to life or health; and
- report of accidents and injuries that occurred during the month.

HAZ-6 The project owner shall make payments to the Chief Building Official (CBO) for the Riverside County Community Health Agency, Department of Environmental Health for the services of a Safety Monitor based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. Those services shall be in addition to other work performed by the CBO. The Safety Monitor shall be selected by and report directly to the CBO and will be responsible for verifying that the Construction Safety Supervisor, as required in Condition of Certification **HAZ-5**, implements all appropriate Cal/OSHA and local safety requirements. The Safety Monitor shall conduct on-site (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.

Verification: Prior to the start of construction, the project owner shall provide proof of its agreement to fund the Safety Monitor services to the Riverside County Community Health Agency, Department of Environmental Health for review and approval.

REFERENCES

AIChE (American Institute of Chemical Engineers). 1989. Guidelines for Technical Management of Chemical Process Safety, AIChE. New York, NY 10017.

CEC 2008a – CEC/M. Jones (tn45678) Application for Certification of an SPPE dated 3/19/08. Submitted to Dockets 3/19/08.

EPA (Environmental Protection Agency). 1987. Technical Guidance for Hazards Analysis, U.S. Environmental Protection Agency, Washington, D.C.

NFPA (National Fire Protection Association). 1987. NFPA 85A, Prevention of Furnace Explosions in Fuel Oil and Natural Gas Fired Single Burner Boiler Furnaces, National Fire Protection Association, Batterymarch Park, Quincy, MA, 1987.

RERC 2008d – PE/M. Tatterson (tn46637) Data Request Responses 1-71. Submitted to Dockets 6/6/08

Appendix A

Hazardous Materials Proposed for Use at the RERC Units 3&4 Project*

Material	CAS No.	Application	Hazardous Characteristics	Quantity on site
Aqueous Ammonia Solution 19.0 %	1336-21-6	NO_X Emissions Control	Irritation to permanent damage from inhalation, ingestion, and skin contact Reactive, vapor is combustible	12,000 gallons in above ground storage tank
Cleaning Chemicals/ Detergents	Various	Periodic cleaning	May be harmful if ingested	10 gallons
Laboratory Reagents	Various	Water/ wastewater laboratory analysis	May be harmful if ingested	10 gallons liquids 50 pounds solids
Mineral Oil Lubricating Oil	None	Gas compressor and bearings lubrication	Hazardous if ingested, corrosive	15 gallons
Synthetic Lubricating Oil	None	Rotating equipment lubrication	Hazardous if ingested Flammable/ combustible	200 gallons
Mineral Lube Oil	None	Rotating equipment lubrication	Hazardous if ingested, corrosive Reactive	782 gallons
Mineral Insulating Oil	None	Transformers	Hazardous if ingested Flammable/ combustible	10,600 gallons
Scale/corrosion inhibitor	Various	Circulating water system scale and corrosion control	Skin, eye and lung irritation, corrosive Reactive	75 gallons
Starbrex ST 70 (sodium hypochlorite and sodium bromine)	sodium hypochlorite: 7681-52-9	Cooling tower	Toxic and corrosive	100 gallons
3D Trasar (sulfuric acid and aromatic amine)	sulfuric acid: 7664-93-9	Cooling tower water pH control	Strong irritant to all tissues, may cause minor burns to permanent damage Highly reactive	75 gallons
Flammable Liquids (gasoline, paint, solvents)	Various	Various	Low Toxicity Flammable	20 gallons

*Source: Table 6.14-2 (RERC 2008a)

HAZARDOUS MATERIALS APPENDIX B:

BASIS FOR STAFF'S USE OF 75 PPM AMMONIA EXPOSURE CRITERIA

Staff uses a health-based airborne concentration of 75 PPM to evaluate the significance of impacts associated with potential accidental releases of ammonia. While this level is not consistent with the 200-ppm level used by EPA and Cal/EPA in evaluating such releases pursuant to the Federal Risk Management Program and State Accidental Release Program, it is appropriate for use in staff's analysis of the proposed project. The Federal Risk Management Program and the State Accidental Release Program are administrative programs designed to address emergency planning and ensure that appropriate safety management practices and actions are implemented in response to accidental releases. However, the regulations implementing these programs do not provide clear authority to require design changes or other major changes to a proposed facility. The preface to the Emergency Response Planning Guidelines (ERPGs) states that "these values have been derived as planning and emergency response guidelines, **not** exposure guidelines, they do not contain the safety factors normally incorporated into exposure guidelines. Instead they are estimates, by the committee, of the thresholds above which there would be an unacceptable likelihood of observing the defined effects." It is staff's contention that these values apply to healthy adult individuals and are levels that should not be used to evaluate the acceptability of avoidable exposures for the entire population. While these guidelines are useful in decision making in the event that a release has already occurred (for example, prioritizing evacuations), they are not appropriate for and are not binding on discretionary decisions involving proposed facilities where many options for mitigation are feasible. CEQA requires permitting agencies making discretionary decisions to identify and mitigate potentially significant impacts through feasible changes or alternatives to the proposed project.

Staff has chosen to use the National Research Council's 30-minute Short Term Public Emergency Limit (STPEL) for ammonia to determine the potential for significant impact. This limit is designed to apply to accidental unanticipated releases and subsequent public exposure. Exposure at this level should not result in serious effects but would result in "strong odor, lacrimation, and irritation of the upper respiratory tract (nose and throat), but no incapacitation or prevention of self-rescue." It is staff's opinion that exposures to concentrations above these levels pose significant risk of adverse health impacts on sensitive members of the general public. It is also staff's position that these exposure limits are the best available criteria to use in gauging the significance of public exposures associated with potential accidental releases. It is, further, staff's opinion that these limits constitute an appropriate balance between public protection and mitigation of unlikely events, and are useful in focusing mitigation efforts on those release scenarios that pose real potential for serious impacts on the public. Table 1 provides a comparison of the intended use and limitations associated with each of the various criteria that staff considered in arriving at the decision to use the 75-ppm STPEL. **Hazardous Materials Appendix C** provides a summary of adverse effects, which might be expected to occur at various airborne concentrations of ammonia.

Hazardous Materials Appendix B Table-1
Acute Ammonia Exposure Guidelines

Guideline	Responsible Authority	Applicable Exposed Group	Allowable Exposure Level	Allowable* Duration of Exposures	Potential Toxicity at Guideline Level/Intended Purpose of Guideline
IDLH[2]	NIOSH	Workplace standard used to identify appropriate respiratory protection.	300 ppm	30 min.	Exposure above this level requires the use of “highly reliable” respiratory protection and poses the risk of death, serious irreversible injury or impairment of the ability to escape.
IDLH/10[1]	EPA, NIOSH	Work place standard adjusted for general population factor of 10 for variation in sensitivity	30 ppm	30 min.	Protects nearly all segments of general population from irreversible effects
STEL[2]	NIOSH	Adult healthy male workers	35 ppm	15 min. 4 times per 8 hr day	No toxicity, including avoidance of irritation
EEGL[3]	NRC	Adult healthy workers, military personnel	100 ppm	Generally less than 60 min.	Significant irritation but no impact on personnel in performance of emergency work; no irreversible health effects in healthy adults. Emergency conditions one time exposure
STPEL[4]	NRC	Most members of general population	50 ppm 75 ppm 100 ppm	60 min. 30 min. 10 min.	Significant irritation but protects nearly all segments of general population from irreversible acute or late effects. One time accidental exposure
TWA[2]	NIOSH	Adult healthy male workers	25 ppm	8 hr.	No toxicity or irritation on continuous exposure for repeated 8 hr. Work shifts
ERPG-2[5]	AIHA	Applicable only to emergency response planning for the general population (evacuation) (not intended as exposure criteria) (see preface attached)	200 ppm	60 min.	Exposures above this level entail** unacceptable risk of irreversible effects in healthy adult members of the general population (no safety margin)

1) (EPA 1987) 2) (NIOSH 1994) 3) (NRC 1985) 4) (NRC 1972) 5) (AIHA 1989)

* The (NRC 1979), (WHO 1986), and (Henderson and Haggard 1943) all conclude that available data confirm the direct relationship to increases in effect with both increased exposure and increased exposure duration.

** The (NRC 1979) describes a study involving young animals, which suggests greater sensitivity to acute exposure in young animals. The (WHO 1986) warns that the young, elderly, asthmatics, those with bronchitis and those that exercise should also be considered at increased risk based on their demonstrated greater susceptibility to other non-specific irritants.

References for Hazardous Materials Appendix B, Table 1

AIHA. 1989. American Industrial Hygienists Association, Emergency Response Planning Guideline, Ammonia, (and Preface) AIHA, Akron, OH.

EPA. 1987. U.S. Environmental Protection Agency, Technical Guidance for Hazards Analysis, EPA, Washington, D.C.

NRC. 1985. National Research Council, Criteria and Methods for Preparing Emergency Exposure Guidance Levels (EEGL), short-term Public Emergency Guidance Level (SPEGL), and Continuous Exposure Guidance Level (CEGL) Documents, NRC, Washington, D.C.

NRC. 1972. Guideline for short-term Exposure of The Public To Air Pollutants. IV. Guide for Ammonia, NRC, Washington, D.C.

NIOSH. 1994. National Institute of Occupational Safety and Health, Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, Washington D.C., Publication numbers 94-116.

WHO. 1986. World health Organization, Environmental Health Criteria 54, Ammonia, WHO, Geneva, Switzerland.

Abbreviations for Hazardous Materials Appendix B, Table 1

ACGIH, American Conference of Governmental and Industrial Hygienists
AIHA, American Industrial Hygienists Association
EEGL, Emergency Exposure Guidance Level
EPA, Environmental Protection Agency
ERPG, Emergency Response Planning Guidelines
IDLH, Immediately Dangerous to Life and Health Level
NIOSH, National Institute of Occupational Safety and Health
NRC, National Research Council
STEL, Short Term Exposure Limit
STPEL, Short Term Public Emergency Limit
TLV, Threshold Limit Value
WHO, World Health Organization

LAND USE, RECREATION, AND AGRICULTURE RESOURCES

Testimony of Amanda Stennick

INTRODUCTION

The land use, recreation, and agricultural resources analysis of the Riverside Energy Resource Center (RERC) Units 3 and 4 Project focuses on the project's compatibility with existing and planned land uses and its consistency with applicable land use plans, ordinances, and policies.

In its analysis of the 2004 SPPE application for RERC Units 1 and 2, staff determined that the project would not physically divide an established community, conflict with any applicable land use plan, policy, or regulation, and would not conflict with any applicable habitat conservation plan. From a land use perspective, with the exception of the transmission line reviewed in the 2004 SPPE application, the projects would be the same and staff's conclusions remain the same.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

The project site is located within the city of Riverside in Riverside County. Land use laws, ordinances, regulations and standards (LORS) applicable to the proposed project are contained in the city of Riverside's General Plan and Title 19 of the city of Riverside Municipal Code section. However, the city of Riverside Ordinance No. 6826 (adopted by the city in September 2005) exempts the project from the requirements and restrictions of Title 19 of the city of Riverside Municipal Code section, in its entirety (see Land Use Appendix A). Section 19.040.110 of Title 19 states the following:

> "Public Projects. Notwithstanding any lawful exemptions to zoning regulations, the provisions of this Title shall not apply to any buildings, improvements, lots or premises, owned, leased, operated or controlled by the City or any City Project for public purposes by the City of Riverside."

Although the project would be located entirely within the city of Riverside, adjacent land to the north of the project site is within unincorporated Riverside County. For this reason, staff addressed the applicable policies of the Riverside County General Plan as part of the analysis.

CITY OF RIVERSIDE ZONING ORDINANCE

The city of Riverside Ordinance No. 6826 (adopted by the city in September 2005) exempts the project from the requirements and restrictions of Title 19 of the city of Riverside Municipal Code section, in its entirety.

CITY OF RIVERSIDE GENERAL PLAN

The 2010 General Plan was replaced in December of 2007 with the adoption of the new 2025 General Plan. The 2025 General Plan foundation is anchored by newly adopted policies and objectives. An objective is an overall statement of community aim, and consists of a broad statement of purpose or direction. Each objective is followed by more definitive policy statements. Policies provide guidance to the City Council, Planning Commission, other boards and commissions, and to the city staff in their review of development proposals and related actions.

The land use designation for the project site is Industrial/Business Park (IB). The IB designation allows for high quality business and industrial parks with strict design standards applied to these developments. As stated above, the city of Riverside exempted the project from Title 19 of its Municipal Code, which includes design standards. The following general plan goals and policies would apply to the project.

Goal LU1. To provide for continuing growth within the Riverside General Plan Area, with land uses and intensities appropriately designated to meet the needs of anticipated growth and to achieve the community's goals related to resource conservation, community enhancement, and growth management.

Goal LU4. To provide for the appropriate timing of development in accordance with the future land uses designated in the Land Use Element.

Policy LU4.2. The City should prepare its Capital Improvements Program and construct its capital improvement projects to provide adequate public facilities and services to the population and employment levels projected through the year 2010, according to the land uses designated in the Land Use Diagram.

Goal E1. To provide an adequate supply of affordable, environmentally sensitive energy resources for residents and businesses in Riverside.

Policy E 1.5. The City should manage the Electric Utility in a businesslike manner to provide electric service to the people of Riverside is a safe, reliable, environmentally sensitive, and fiscally responsible way, while minimizing total utility costs over the long run.

MULTI-SPECIES HABITAT CONSERVATION PLAN (MSHCP)

The MSHCP serves as a comprehensive, multi-jurisdictional Habitat Conservation Plan (HCP), pursuant to Section (a) (1) (B) of the Federal Endangered Species Act of 1973, and as a Natural Communities Conservation Plan (NCCP) under the NCCP Act of 2001. The plan encompasses all unincorporated Riverside County land west of the crest of the San Jacinto Mountains to the Orange County line, including the jurisdictional areas of the Cities of Temecula, Murrieta, Lake Elsinore, Canyon Lake, Norco, Corona, Riverside, Moreno Valley, Banning, Beaumont, Calimesa, Perris, Hemet, and San Jacinto. The overall goal of the MSHCP is to conserve covered species and their habitats, including maintaining biological diversity and ecological processes while allowing for future economic growth within the MSHCP area.

The city of Riverside is a permittee of the MSHCP. The proposed project is located within the Western Riverside County MSHCP Area and is required to comply with applicable provisions of the plan. Please refer to the **Biological Resources** section of this document for a thorough discussion of the project's compliance with the MSHCP.

RIVERSIDE COUNTY GENERAL PLAN

The Riverside County General Plan was adopted in 2003 and describes uses and planning policy for the unincorporated lands within Riverside County. It is also a blueprint for the County's future growth and development. The General Plan has designated certain areas in the County into 19 area plans. The purpose of the area plans is to provide more detail on land use and policy direction regarding local issues affecting these areas. The unincorporated Riverside County land adjacent to the north side of the project site is within the Jurupa Area Land Use Plan and is designated Light Industrial. This designation allows for a variety of industrial and related uses, including assembly, light manufacturing, warehousing, repair and other service facilities. The following policies of the Jurupa Area Plan are relevant to the project.

JURAP 7.2. Require development, where allowable, to be set back an appropriate distance from the top of bluffs, in order to protect the natural and recreational values of the river and to avoid public responsibility for property damage that could result from soil erosion or future floods.

JURAP 7.3. Encourage future development that borders the Policy Area to design for common access and views to and from the Santa Ana River.

JURAP 7.13. Discourage utility lines within the river corridor. If approved, lines shall be placed underground where feasible and shall be located in a manner to harmonize with the natural environment and amenity of the river.

SETTING

PROJECT LOCATION AND DESCRIPTION

The project site is owned by the city of Riverside and is located adjacent to the city of Riverside's Regional Water Quality Control Plant (RRWQCP) in a light industrial/manufacturing area. RERC Units 1&2, the switchyard, and interconnections for natural gas, water, and electric transmission are located at the site. The RERC Units 3 and 4 Project would consist of two additional combustion turbine generators, an expansion of the on-site switchyard, plus two ancillary buildings. RERC Units 3 and 4 would occupy approximately 2.2 acres of the 16-acre site. An additional 2 acres are reserved for construction laydown. The entire RERC site perimeter is fenced with a combination of chain-link fencing and architectural block walls.

The demographic information in **Socioeconomics Figure 1** shows the census block where the project is located is populated with 75.0 to 100.0% people of color. The nearest residences within this block are west, within one mile of the project site. The overall percentage of people of color within the six-mile radius of the project is 57.25%. The number of persons in poverty within the six-mile radius is 15.3%.

SURROUNDING LAND USE

As stated above, the proposed RERC site is located in a predominantly industrial area. Existing land uses in the vicinity of the project site include:

- North: Santa Ana River and lands in the Santa Ana River Wetlands Mitigation Bank, and unincorporated land in Riverside County;
- South: Union Pacific Railroad, Riverside Municipal Airport, industrial and commercial uses, and a dog kennel;
- East: Union Pacific Railroad, borrow pits, industrial and commercial uses, and single-family residential; and
- West: Storage yards, commercial businesses, City of Riverside Wastewater Treatment Plant, small cogeneration facility, and residential.

RECREATIONAL FACILITIES

Unincorporated lands in the county are north, west, and east of the project site. These lands are part of the Santa Ana River Corridor and are referred to in the Riverside County General Plan as the Santa Ana River Wildlife Area. The Hidden Valley Wildlife Area, which is also in the Santa Ana River Corridor, lies west of Van Buren Boulevard. A multi-use trail is located in the Corridor and parallels the Santa Ana River within one-quarter mile of the project site. The Santa Ana River Wildlife Area and the Hidden Valley Wildlife Area are within the one-mile study area but no project-related facilities would be built nor transmission lines sited within these areas.

The Martha McLean Anza Narrows Park is managed by Riverside County as part of the larger Santa Ana River Corridor and is located along the south side of the River within the City of Riverside. The Park is about two miles from the project site. The Jurupa Hills Country Club and Golf Course is north of the Santa River Corridor, north of the project site. The Country Club is located within one mile of the project site.

The construction and operation of Units 3 and 4 would not affect any recreational uses within the study area.

IMPACTS

Following is the Environmental Checklist that identifies potential impacts in this issue area. Below the checklist is a discussion of each impact, and an explanation of the impact conclusion.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
LAND USE AND PLANNING -- Would the project:				
A. Physically divide an established community?				**X**
B. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				**X**
C. Conflict with any applicable habitat conservation plan or natural community conservation plan?				**X**
RECREATION				
A. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				**X**
B. Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?				**X**
AGRICULTURE RESOURCES -- In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
A. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				**X**
B. Conflict with existing zoning for agricultural use, or a Williamson Act contract?				**X**
C. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?				**X**

DISCUSSION OF IMPACTS

Land Use and Planning

A. Division of an Established Community- No Impact

The proposed RERC would be located in an area within the city of Riverside designated for industrial development. The site is currently surrounded by similar industrial uses. Neither the size nor nature of the project would result in a physical division of an established community. No new physical barriers would be created by the project and no existing roadways or pathways would be blocked.

B. Conflict with Land Use Plans or Policies- No Impact

As described above, the proposed RERC would be located in an area intended for industrial development based on its land use and zoning designation. Furthermore, the site is adjacent to existing similar industrial uses such as the city of Riverside Wastewater Treatment Plant and storage yards. According to the city of Riverside, the proposed RERC project is exempt from Title 19 of its Municipal Code. However, the proposed RERC project is consistent with the applicable policies of the city of Riverside and county general plans.

The proposed project would not be situated on or near the bluffs of the Santa Ana River, nor would it restrict common access or views to the River. No utility lines would be placed within the River Corridor. For these reasons, the proposed project would be consistent with the County of Riverside goals and policies described above. Staff has determined that the proposed RERC project would not conflict with any applicable land use plans or policies.

C. Conflict with Habitat or Natural Community Conservation Plans- No Impact

Please refer to the **Biological Resources** section of this document for a discussion of the MSHCP.

Recreation

A. Increased Use of Recreational Facilities- No Impact

Physical impacts to public services and facilities such as recreational facilities are usually associated with population in-migration and growth in an area, which increase the demand for a particular service. An increase in population in any given area may result in the need to develop new, or alter existing, government facilities in order to accommodate increased demand.

As shown in the Socioeconomics section of this document, the proposed project is not expected to generate or result in an increase in the population of the area. Staff has concluded that the regional workforce would be able to accommodate the RERC construction labor needs and the project would not increase the area’s population (See the **Socioeconomics** section of this document for an analysis of the construction workforce). Therefore, staff has concluded that the proposed project would not increase the use of existing recreational facilities or result in their deterioration. No impacts would occur.

B. Construction of Recreational Facilities- No Impact

As a power generation project, the proposed project does not include recreational facilities or require the construction or expansion of existing recreational facilities. As described above, the proposed project would not result in an increase in the area's population that would require new or expanded recreational facilities whose construction would in turn lead to an adverse physical effect on the environment. No impacts would occur.

Agricultural Resources

A. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance: No Impact

The project facility, adjacent construction parking and laydown areas, and associated pipelines are not located in any areas designated as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland on the California Department of Conservation's Important Farmland Inventory Map for Riverside County.

B. Conflict with Existing Zoning: No Impact

As stated above, Title 19 of the city of Riverside Municipal Code would not apply to the project.

C. Conversion of Farmland: No Impact

The project site is owned by the city of Riverside and is located in a light industrial/manufacturing area. There are currently no crops grown at the project site and the parcel has no known history of being farmed. One parcel of land designated as Unique Farmland occurs near the project. It is 23.9 acres in size and is located approximately 0.5 miles east of the RERC Units 3&4 project area and 0.25 miles north of Jurupa Avenue. Proposed project activities would not affect this parcel of land. The project would not impact agricultural lands or result in the conversion of any lands that are used for agricultural purposes.

CUMULATIVE IMPACTS

Cumulative impacts may be caused if a project would have effects that are individually limited but cumulatively considerable when viewed together with the effects of related projects. Selected acreage on and around the Riverside Municipal Airport is located in the city of Riverside redevelopment zones and, as such, is currently being developed or planned for development. Development projects include hangars and service facilities for corporate and business aviations' operations. Staff does not expect the Airport redevelopment, by itself or with the proposed RERC to cause significant cumulative impacts. There are currently no other known projects proposed in the vicinity of the proposed RERC (Hayes 2004). Therefore, no cumulative land use impacts are expected to result from construction and operation of the proposed project.

CONCLUSIONS

The project would not physically divide an established community, conflict with any applicable land use plan, policy, or regulation, and would not conflict with any applicable habitat conservation plan. The proposed use would be consistent with the provisions of the City of Riverside General Plan and would be exempt from Title 19 of the city of Riverside Municipal Code.

The project would not significantly increase the use of public parks or recreational facilities, nor would it necessitate the construction or expansion of recreational facilities. Therefore, there are no land use impacts.

PROPOSED CONDITIONS OF EXEMPTION

Staff proposes no conditions of exemption for land use.

REFERENCES

RERC (Riverside Energy Resource Center) 2004a: Application for Small Power Plant Exemption. Submitted to the California Energy Commission on April 26, 2004.

RERC (Riverside Energy Resource Center) 2004b: Data Responses to the Application for Small Power Plant Exemption. Submitted to the California Energy Commission on June 14, 2004.

CEC 2008 - California Energy Commission/ F. Miller (tn46184) Data requests 1 to 71 (SET #1) Letter to Mike Tatterson, Power Engineers. 5/6/2008

CEC 2008? - California Energy Commission/ T. O'Brien (tn46701) Notice of Data Response and Issue Resolution Staff Workshop for the Riverside Energy Resources Center Units 3&4 (08-SPPE-1). 6/26/2008

CEC 2008? - California Energy Commission/ F. Miller (tn?????) Memorandum and report from Felicia Miller to Commissioners Douglas and Boyd both on the topic of "Issues Identification Report for the Riverside Energy Resource Center Units 3&4 Project – Small Power Plant Exemption" (08-SPPE1). 6/9/2008

CEC 2008? - California Energy Commission/ E. Allen (tn45879) Notice of Receipt, Application for Small Power Plant Exemption (08-SPPE-1), Riverside Entergy Resource Center Units 3&4 Project (08-SPPE-1). 4/11/2008.

CEC 2008? - California Energy Commission/ F. Miller (tn46199) Memorandum to Commissioners Douglas and Boyd regarding "Issues Identification Report for the Riverside Energy Resource Center Units 3&4 Project – Small Power Plant Exemption (08-SPPE-1). 5/8/2008

CEC 2008? - California Energy Commission/ T. O'Brien (tn46701) Notice of Data Response & Issues Resolution Staff Workshop for the Riverside Energy Resource Center Units 3&4 (08-SPPE-1), Wednesday, June 26, 2008 (08-SPPE-1) 6/26/2008

LAND USE Appendix A

ARTICLE I: ZONING CODE ENACTMENT AND APPLICABILITY

Chapter 19.040

ZONING CODE APPLICABILITY

19.040.010 Prior Rights and Violations.

The enactment of the Zoning Code shall not terminate nor otherwise affect vested land use development permits, approvals, or agreements authorized under the provisions of any ordinance or resolution, nor shall violation of any prior ordinance or resolution be excused by the adoption of this Title. (Ord. 6966 §1, 2007)

19.040.020 Public Nuisance.

Neither the provisions of the Zoning Code nor the approval of any permit authorized by the Zoning Code shall authorize the maintenance of any public nuisance. (Ord. 6966 §1, 2007)

19.040.030 Continuation of an Existing Land Use or Structure.

It is unlawful and a violation of the Riverside Municipal Code for anyone to use a parcel or structure in a manner that violates any provision of the Zoning Code. However, a land use that was lawfully established before this Title was enacted, or before enactment of any applicable amendment to the Zoning Code, may continue. No expansion or modification to a pre-existing legal nonconforming use or structure shall be permitted except as allowed by Chapter 19.080 (Nonconformities) of the Zoning Code. It is the responsibility of the property owner to provide evidence or information to justify or establish nonconforming rights. Enforcement of this Section shall be in accordance with Article III (Nonconforming Provisions) of the Zoning Code. (Ord. 6966 §1, 2007)

19.040.040 Conflicts with Other Regulations.

Where any conflict occurs between the provisions of the Zoning Code and the provisions of other titles of the Riverside Municipal Code or other regulations adopted by the City, the more restrictive provisions shall apply. Nothing contained in the Zoning Code shall be deemed to repeal or amend any regulation of the City requiring a permit or license or both, nor shall anything in the Zoning Code be deemed to repeal or amend other titles of the Riverside Municipal Code. (Ord. 6966 §1, 2007)

19.040.050 Conflicts with Overlay Zones.

In the event of any conflict between the requirements of the Zoning Code and standards in an adopted Overlay Zone or Planned Residential Development, the requirements of the Overlay Zone or applicable Planned Residential Development shall govern. (Ord. 6966 §1, 2007)

19.040.060 Conflicts with Specific Plans.

In the event of any conflict between the requirements of the Zoning Code and standards in an adopted Specific Plan, the requirements of the Specific Plan shall govern. (Ord. 6966 §1, 2007)

19.040.070 Conflicts with Development Agreements.

In the event of any conflict between the requirements of the Zoning Code and standards in an adopted Development Agreement, the requirements of the Development Agreement shall govern. (Ord. 6966 §1, 2007)

19.040.080 Development Applications in Process.

Following the effective date of the Zoning Code, or any amendment of the Zoning Code, regulations of the Zoning Code are applicable to all applications in process, except for any application deemed to have been previously submitted and complete by the Planning Division , in that case the prior Zoning Code regulations, then in effect, shall apply. (Ord. 6966 §1, 2007)

19.040.090 Other Requirements/Permits.

Nothing in the Zoning Code eliminates the need for obtaining any other permits required by the City, or any permit or approval required by other provisions of the Riverside Municipal Code or the regulations of any City department, including the Riverside Redevelopment Agency, or any county, regional, State, or Federal agency. (Ord. 6966 §1, 2007)

19.040.100 Conflicting Permits.

After the effective date of the Zoning Code, or any amendment hereto, all permits for the use of land shall be issued in compliance with the provisions of the Zoning Code. Any permit issued after the effective date of the Zoning Code that conflicts with the provisions of the Zoning Code shall be deemed invalid. (Ord. 6966 §1, 2007)

19.040.110 Public Projects.

Notwithstanding any lawful exemptions to zoning regulations, the provisions of this Title shall not apply to any buildings, improvements, lots or premises, owned, leased, operated or controlled by the City or any City Project for public purposes by the City of Riverside. (Ord. 6966 §1, 2007)

19.040.120 Severability, Partial Invalidation of Zoning Code.

If any portion of this Title is held to be invalid, unconstitutional, or unenforceable by a court of competent jurisdiction, such determinations shall not affect the validity of the remaining portions of this Title. The City Council hereby declares that this Title and each article, section, subsection, paragraph, subparagraph, sentence, clause, phrase and portion thereof is adopted without regard to the fact that one or more portions of this Title may be declared invalid, unconstitutional, or unenforceable. (Ord. 6966 §1, 2007)

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NOISE AND VIBRATION

Steve Baker

INTRODUCTION

The construction and operation of any power plant creates noise, or unwanted sound. The character and loudness of this noise, the times of day or night that it is produced, and the proximity of the facility to sensitive receptors combine to determine whether the facility would meet applicable noise control laws and ordinances and whether it would cause significant adverse environmental impacts. In some cases, vibration may be produced as a result of power plant construction practices, such as blasting or pile driving. The groundborne energy of vibration has the potential to cause structural damage and annoyance.

The purpose of this analysis is to identify and examine the likely noise and vibration impacts from the construction and operation of the Riverside Energy Resource Center Units 3 & 4 project (RERC3&4) and to recommend procedures to ensure that the resulting noise and vibration impacts would be adequately mitigated. For an explanation of technical terms and acronyms employed in this section, please refer to **NOISE and VIBRATION Appendix A** immediately following.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

FEDERAL

Under the Occupational Safety and Health Act of 1970 (29 USC § 651 et seq.), the Department of Labor, Occupational Safety and Health Administration (OSHA) has adopted regulations designed to protect workers against the effects of occupational noise exposure (29 CFR § 1910.95). These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed (see **NOISE and VIBRATION Appendix A, Table A4** immediately following this section). The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.

There are no federal laws governing off-site (community) noise.

The only guidance available for evaluation of power plant vibration is guidelines published by the Federal Transit Administration (FTA) for assessing the impacts of groundborne vibration associated with construction of rail projects. These guidelines have been applied by other jurisdictions to assess groundborne vibration of other types of projects. The FTA-recommended vibration standards are expressed in terms of the "vibration level," which is calculated from the peak particle velocity measured from groundborne vibration. The FTA measure of the threshold of perception is 65 VdB,[1]

[1] VdB is the common measure of vibration energy.

which correlates to a peak particle velocity of about 0.002 inches per second (in/sec). The FTA measure of the threshold of architectural damage for conventional sensitive structures is 100 VdB, which correlates to a peak particle velocity of about 0.2 in/sec.

STATE

California Government Code section 65302(f) encourages each local governmental entity to perform noise studies and implement a noise element as part of its General Plan. In addition, the California Office of Planning and Research has published guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure.

The California Occupational Safety and Health Administration (Cal/OSHA) has promulgated Occupational Noise Exposure Regulations (Cal. Code Regs., tit. 8, §§ 5095–5099) that set employee noise exposure limits. These standards are equivalent to the federal OSHA standards (see the **Worker Safety and Fire Protection** section of this document, and **NOISE and VIBRATION Appendix A, Table A4**).

LOCAL

The noise levels generated by RERC3&4 would propagate to sensitive receptors within both the City and County of Riverside. Therefore, the noise LORS of these two jurisdictions apply to this project.

City of Riverside

Section 7.25.010 of Title 7 of the City of Riverside Municipal Code establishes noise level standards for various land use categories shown in **NOISE: Table 1** below. These standards use the hourly median level L_{50} (level not to be exceeded 30 minutes in any one-hour time period). According to these criteria, the threshold for nighttime noise levels for residential receptors is 45 dBA L_{50} (RERC 2008a, SPPE Table 6.7-3) (see **NOISE and VIBRATION Appendix A, Table A-1** for definitions of this and other terms).

NOISE: Table 1
City of Riverside Noise Standards

Land Use	Noise Level (dBA L_{50})
Residential	45 (10 p.m. to 7 a.m.) 55 (7 a.m. to 10 p.m.)
Office/Commercial	65 (anytime)
Industrial	70 (anytime)

Riverside County

The Riverside County Office of Public Health specifies that non-transportation noise, when experienced at a nearby residential property or school, must not exceed an energy average, or L_{eq}, of 65 dBA between 7 a.m. and 10 p.m. or 45 dBA between 10 p.m. and 7 a.m. (RERC 2008a, SPPE § 6.7.4).

SETTING

The RERC3&4 project would be a nominal 95 MW natural gas-fired, simple cycle peaking power plant, comprised of two General Electric LM6000PC SPRINT NxGen gas turbine generators equipped with inlet air chillers and exhaust ducting, a common chiller package, an evaporative cooling tower, a fin-fan air cooler, two demineralized water storage tanks, a Dispatch and Scheduling building, three air compressors and three natural gas fuel compressors. The new equipment would be installed immediately to the north of the existing RERC Units 1 & 2 (RERC 2008a, SPPE §§ 1.1, 1.3, 2.1, 2.2, 2.5, 6.7.1.1).

EXISTING LAND USE

The RERC3&4 project would be located in the City of Riverside, adjacent to the City's existing RERC Units 1 & 2, in a light Industrial/manufacturing area (RERC 2008a, SPPE §§ 1.3, 2.1, 2.2, 6.7.1.1). Sensitive noise receptors in the vicinity of the project include residential uses, one church, one school, one park and a recreational trail within close proximity to the site (RERC 2008a, SPPE §§ 6.7.1.1, 6.7.3). The residences at noise measurement location LT-1 (see below), approximately 2,870 feet (0.54 mile) north of the site, are the sensitive receptors of greatest interest in the following analysis, as they are the nearest residential community to the project site, and would thus be exposed to the greatest noise levels.

EXISTING NOISE LEVELS

In order to predict the likely noise effects of the project on nearby sensitive receptors, the applicant commissioned ambient noise surveys of the area. The surveys were conducted using commonly accepted techniques and equipment. The existing noise environment is composed of traffic noise from local streets, operations on the Metrolink/Union Pacific rail line, flight activities from Riverside Municipal Airport, industrial activities, the Riverside Regional Water Quality Control Plant (RRWQCP), and the RRWQCP's 3.3 MW cogeneration facility. This noise analysis is based upon the noise environment that existed before construction of RERC Units 1 & 2. This results in a conservative analysis in that noise from the currently existing power plant does not raise the ambient levels against which noise from RERC3&4 is evaluated (RERC 2004a, SPPE §§ 6.7.1.1, 6.7.3).

Noise was monitored continuously for 25 hours in the rear yard of the residence at 6495 Thunder Bay Trail (location LT-1, north of the site), representing the nearest residential community (2,870 feet) to the project site (RERC 2008a, SPPE §§ 6.7.1.1, 6.7.3; Table 6.7-4; Appendix 6.7-A). (Note that, for purposes of predicting project noise impacts, it is assumed that the project's noise would emanate from the center of the site.) Long term measurements were also conducted at two other residential neighborhoods to the west and east of the site. Short-term noise measurements (20 minutes in duration) were also taken at 12 other locations surrounding the project site.

Refer to **NOISE and VIBRATION - Figure 1** for the location of the noise monitoring sites.

NOISE: Table 2 is a summary of the ambient noise measurement results at LT-1 (RERC 2008a, SPPE Table 6.7-4; App. 6.7-A).

NOISE: Table 2
Applicant's Summary of Measured Ambient Noise Levels

Measurement Site	Measured Noise Levels (dBA)[1,2]		
	L_{eq}	L_{90}	L_{50}
LT-1	60	42	45

[1] Microphone at 1st floor elevation (5 feet above ground) (RERC 2008a, SPPE Table 6.7-1; App. 6.7-A)
[2] 25-hour average

In general, the noise environment in the immediate vicinity of the project site is fairly loud, typical of an industrial neighborhood, with noise levels lower at night than in the daytime. Due to the relatively constant nature of power plant noise, Energy Commission staff typically compares power plant noise to the nighttime ambient background (L_{90}) noise level, averaged over the quietest four consecutive hours of the night. These nighttime noise levels are summarized in **NOISE: Table 3** below.

NOISE: Table 3
Staff's Summary of Measured Ambient Noise Levels

Measurement Site	Measured Noise Levels (dBA L_{90})[1]		
	L_{eq}	L_{90}	L_{50}
LT-1	49	39	40

[1] Staff calculations, hours from midnight to 4:00 a.m. (RERC 2008a, SPPE App. 6.7-A)

IMPACTS

CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA requires that significant environmental impacts be identified, and that such impacts be eliminated or mitigated to the extent feasible. Section XI of Appendix G of CEQA Guidelines (Cal. Code Regs., tit. 14, App. G) sets forth some characteristics that may signify a potentially significant impact. Specifically, a significant effect from noise may exist if a project would result in:

- exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies;
- exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
- substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The Energy Commission has interpreted the CEQA criteria such that noise produced by the permitted power-producing facility that causes an increase of more than 10 dBA in the background noise level (L_{90}) at a noise sensitive receiver during the quietest hours of the day is usually considered a significant effect. An increase of less than 5 dBA is typically considered an insignificant impact, while an increase from 5 to 10 dBA may be considered significant, depending on the specific circumstances.

Noise due to construction activities is usually considered to be insignificant in terms of CEQA compliance if:

- the construction activity is temporary;
- use of heavy equipment and noisy activities is limited to daytime hours; and
- all feasible noise abatement measures are implemented for noise-producing equipment.

ANALYSIS OF IMPACTS

Noise impacts associated with the project can be created by construction activities, and by normal long-term operation of the power plant. Following is the Environmental Checklist that identifies potential impacts in this issue area. Below the checklist is a discussion of each impact, and an explanation of the impact conclusion.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
NOISE – Would the project result in:				
A. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?		**X**		
B. Exposure of persons to or generation of excessive groundborne vibration noise levels?				**X**
C. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?		**X**		
D. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?		**X**		
E. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels?			**X**	
F. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the area to excessive noise levels?				**X**

DISCUSSION OF IMPACTS

A. Noise in Excess of Standards or Ordinances: Less Than Significant with Mitigation Incorporated

General Construction Noise

Construction noise is usually considered a temporary phenomenon. In this case, the construction period for the RERC3&4 would be approximately nine months (RERC 2008a, SPPE § 2.4). Construction of an industrial facility such as a power plant is typically noisier than permissible under usual noise ordinances. In order to allow the construction of new facilities, construction noise during certain hours is commonly exempt from enforcement by local ordinances.

Applicable LORS do not limit the loudness of construction noise, but staff compares the projected noise levels to the ambient. In this case, since construction would take place in daytime hours, it is compared to daytime ambient levels. Because construction noise is not constant, but varies with time, staff customarily compares it with the ambient L_{eq} level, a measure appropriate for evaluating varying noise levels.

The applicant's estimated L_{eq} levels at the nearest noise sensitive receptor, the recreational trail located 790 feet northeast of the site (location ST-5), are summarized in **NOISE: Table 4** below (RERC 2008a, SPPE Table 6.7-6).

NOISE: Table 4
Applicant's Summary of Estimated Construction Noise Levels (dBA L_{eq})

Measurement Site	Construction Noise Level	Measured Existing Ambient	Cumulative	Change
ST-5	50	46	51	+5

The applicant states that construction activities for RERC3&4 and its associated linear facilities would occur only on weekdays between the hours of 7 a.m. and 7 p.m., and Saturdays between 8 a.m. and 5 p.m. No construction would occur on Sundays or federal holidays (RERC 2008a, § 6.7.6.2). These time frames comply with the local regulations.

As seen in **NOISE: Table 4** above, project construction is expected to increase the noise level at the recreational trail by 5 dBA, a noticeable but not generally annoying increase. Because construction noise is temporary in nature and construction activities would occur during daytime hours, the noise effect of plant construction is considered to be insignificant. Should project construction require occasional noisy construction activities beyond the hours designated above and stated in the City Noise Ordinance (City of Riverside 1968, § 7.35.010), the applicant should first obtain a variance from the City of Riverside. Since these activities would be occasional and construction noise is temporary in nature, the noise effect of plant construction during the extended hours is considered to be insignificant.

Power Plant Operation

As described above, the applicable City LORS establishes a threshold of 45 dBA (L_{50}) and the applicable County LORS establishes a limit of 45 dBA (L_{eq}) for nighttime hours.

The primary noise sources anticipated from the facility include the gas turbine generators, transformers, and fuel gas compressors (RERC 2008a, §§ 6.7.1.1, 6.7.5). The noise emitted by power plants during normal operations is generally broadband, steady state in nature. The resulting hourly average noise levels are typically dominated by the steady-state noise sources. For this reason, staff compares project noise to the ambient background (L_{90}) level to analyze the effects of operational noise levels on the sensitive receptors.

The applicant has projected a project noise level at the nearest residential sensitive receptors, those residences near noise monitoring location LT-1, of 43 dBA L_{eq} (RERC 2008a, SPPE Table 6.7-5). Based on this projection, staff has calculated the cumulative noise level (project plus ambient) using the average ambient background noise level during the four quietest consecutive nighttime hours at this location (see **NOISE: Table 5** below). These figures show an expected cumulative level of 44 dBA, 1 dBA lower than the LORS threshold. Therefore, the RERC's operational noise levels comply with the County and City's noise requirements.

The applicant has projected cumulative noise levels (project plus ambient) at the recreational trail north of the site of 51 dBA L_{eq}, similar to construction noise levels. This represents an increase of 5 dBA above the ambient L_{eq} level, which staff considers a less than significant impact. Staff has proposed Condition of Exemption **NOISE-3** below to ensure that this level is not exceeded.

B. Excessive Vibration: No Impact

The primary source of vibration noise associated with a power plant is the operation of the turbines. The plant's turbines must be maintained in optimal balance to minimize excessive vibration that can cause damage or long term wear. Consequently, no discernible vibration would be experienced by adjacent land uses.

Another potential source of significant vibration is pile driving during construction. The applicant has not proposed to use pile driving. Therefore no pile driving noise or vibration impacts are expected.

C. Permanent Increase in Ambient Noise Level: Less Than Significant with Mitigation Incorporated

Power Plant Operation

During its operating life, the RERC would represent essentially a steady, continuous noise source day and night. Occasional brief increases in noise levels would occur during load changes, or during startup or shutdown as the plant transitions to and from steady-state operation. At other times, such as when the plant is shut down for lack of dispatch or for maintenance, noise levels would decrease.

The applicant performed acoustical calculations to determine the facility noise emissions. The calculations were based on specific manufacturer noise data for the major equipment planned for the facility (RERC 2008a, SPPE Appendix 6.7-A). Specific noise mitigation measures evaluated include gas turbine air inlet silencers; gas turbine acoustic weather enclosures; and gas turbine exhaust stack silencers.

NOISE: Table 5 lists the predicted project noise levels during plant operation in terms of the background (L_{90}):

NOISE: Table 5
Summary or Predicted Operational Noise Levels

Measurement Site	Noise Levels (dBA)			
	Nighttime Ambient[1]	Project[2]	Cumulative	Change
LT-1	39 L_{90}	43 L_{eq}	44 L_{eq}	+5

[1] Staff's summary of measured ambient noise levels (**NOISE: Table 3**)
[2] Applicant's estimate (RERC 2008a, SPPE Table 6.7-5)

It is seen from these figures that the increase above the four-hour nighttime average background noise level (L_{90}) at noise monitoring location LT-1 (nearest residential receptor to the project site) due to the project would be 5 dBA. (This considers the incorporation of the mitigation measures described above and committed to by the applicant (RERC 2008a, SPPE § 6.7.5)). This increase would be barely noticeable; staff considers it a less than significant impact and finds the project's operational noise levels in compliance with CEQA guidelines.

In order to ensure that RERC3&4 noise impacts are, in fact, less than significant, Energy Commission staff proposes three Conditions of Exemption, below.

Linear Facilities

The project's linear facilities would all be effectively silent in operation. No significant noise impacts are likely.

Tonal and Intermittent Noises

One possible source of annoyance would be strong tonal noises. Tonal noises are individual sounds (such as pure tones) that, while not louder than permissible levels, stand out in sound quality. The noise levels for the RERC3&4 are fairly broadband, and absent of discrete tonal noise, typical of a simple cycle power plant. Therefore the project is not expected to result in tonal noise impacts at the nearest noise sensitive receptors.

In order to ensure that after the start of operation no new pure-tone noise components will be introduced in the project, Energy Commission staff proposes Condition of Exemption **NOISE-3**, below.

Worker Effects

The applicant recognizes the need to protect plant operating and maintenance personnel from noise hazards, and has committed to comply with applicable LORS

(RERC 2008a, SPPE §§ 6.7.7.1, 6.7.7.2). Signs would be posted in areas of the plant with noise levels exceeding 85 dBA (the level that OSHA recognizes as a threat to workers' hearing), and hearing protection would be required. The applicant would implement a comprehensive hearing conservation program.

D. Substantial Temporary Increase in Noise Level: Less Than Significant with Mitigation Incorporated

General Construction Noise

The applicant has prepared an analysis of construction noise impacts, listing predicted noise levels due to specific types of equipment and of generalized construction activities (RERC 2008a, SPPE § 6.7.6.2; Table 6.7-6).

Compared to the existing daytime L_{eq} level, the predicted plant construction noise level at the nearest noise sensitive receptor, the recreational trail (ST-5), would result in a cumulative noise level of 51 dBA, 5 dBA higher than under the ambient conditions (see **NOISE: Table 4** above). However, this resulting cumulative noise level is within normally acceptable limits for short-term noise exposures. Because construction noise is temporary in nature and construction activities would occur during daytime hours, the noise effect of plant construction is considered to be less than significant.

Linear Facilities

Construction of the linear facilities would produce noise due to the operation of heavy powered equipment. The applicant has provided a listing of typical construction equipment and the expected noise levels at a reference distance of 50 feet (RERC 2008a, SPPE Table 6.7-6). The use of powered equipment in proximity to residences would cause increases in ambient noise levels. However, because the increase in noise levels is of a temporary nature, and because construction noise would occur during daytime hours, the noise effect of linear facilities construction is considered to be less than significant.

Worker Effects

The applicant acknowledges the need to protect construction workers from noise hazards. The applicant recognizes the applicable LORS that would protect construction workers, and commits in general to complying with them (RERC 2008a, SPPE §§ 6.7.6.2, 6.7.7.2).

E. Airport Noise Impacts: Less Than Significant Impact

The project site would be located near the Riverside Municipal Airport. Noise associated with airplane take-off and landing at this airport is loud and short in duration. The power plant operational noise levels are comparatively quiet and generally steady state in nature. Therefore, noise levels from RERC3&4, when combined with noise from the aircraft activities, would not expose any person in the project area to excessive noise levels.

F. Private Airstrip Impacts: No Impact

The project is not near a private airstrip, therefore there would be no impacts related to private airstrips.

CUMULATIVE IMPACTS AND MITIGATION

Cumulative impacts may be caused if a project would have effects that are individually limited but cumulatively considerable when viewed together with the effects of related projects. Neither the applicant nor Energy Commission staff is aware of any other similar projects in the immediate area. Since noise impacts from two projects can only accumulate if the projects are relatively near each other, i.e., within less than half a mile, staff believes no cumulative noise impacts are likely for RERC3&4.

CONCLUSIONS AND RECOMMENDATIONS

Energy Commission staff concludes that the RERC3&4 project is not expected to produce significant adverse noise impacts. Staff further concludes that the project would comply with the applicable noise LORS, and would not result in cumulative impacts. In order to ensure this, staff proposes three Conditions of Exemption, below.

PROPOSED CONDITIONS OF EXEMPTION

NOISE-1 At least 15 days prior to the start of ground disturbance, the project owner shall notify all residents within ¾ mile of the site and ½ mile of the linear facilities, by mail or other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

Verification: Prior to ground disturbance, the project owner shall transmit to the Compliance Project Manager (CPM) a statement, signed by the project owner's project manager, stating that the above notification has been performed, and describing the method of that notification, verifying that the telephone number has been established and posted at the site, and giving that telephone number.

NOISE COMPLAINT PROCESS

NOISE-2 Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project related noise complaints.

The project owner or authorized agent shall:

- Use the Noise Complaint Resolution Form (see Exhibit 1), or functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
- Attempt to contact the person(s) making the noise complaint within 24 hours;
- Conduct an investigation to determine the source of noise related to complaint;
- If the noise is project related, take all feasible measures to reduce the noise at its source; and
- Submit a report documenting the complaint and the actions taken. The report shall include: a complaint summary, including final results of noise reduction efforts; and, if obtainable, a signed statement by the complainant stating that the noise problem is resolved to the complainant's satisfaction.

Verification: Within 30 days of receiving a complaint, project owner shall file a copy of the Noise Complaint Resolution Form, with the City of Riverside Planning Department and with the CPM, documenting the resolution of the complaint. If mitigation is required to resolve a complaint, and the complaint is not resolved within a 30-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is finally implemented.

NOISE-3 The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that noise due solely to operation of the project during the quietest 4-hour period will not exceed 43 dBA when measured at residential receivers at noise monitoring location LT-1; that noise due solely to operation of the project will not exceed 51 dBA when measured at the recreational trail north of the site (ST-5); and that the noise due solely to operation of the project will comply with the noise standards of the City of Riverside Municipal Code and the Riverside County General Plan Noise Element.

No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints. The production of pure tones during normal plant operation is not allowed.

Within 30 days of the project first achieving a sustained output of 80% or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey at monitoring locations LT-1 and ST-5. The survey during the power plant operations shall also include measurement of one-third octave band sound pressure levels to ensure that no new pure-tone noise components have been introduced.

If the results from the noise survey indicate that the noise produced by the project exceeds 43 dBA at location LT-1 for the quietest 4-hour period during the 25-hour period; that the noise produced by the project exceeds 51 dBA at the recreational trail north of the site; or that the noise standards of the City of Riverside Municipal Code or the Riverside County General Plan Noise Element have been exceeded, mitigation measures shall be implemented to reduce noise to a level of compliance with these limits. If any pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.

Verification: Within 15 days after completing the survey, the project owner shall submit a summary report of the survey to the City of Riverside Planning Department, to the Riverside County Planning Department, and to the CPM. Included in the report shall be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limits, and a schedule, subject to CPM approval, for implementing these measures. Within 15 days of completion of installation of these measures, the project owner shall submit to the CPM a summary report of a new noise survey, performed as described above and showing compliance with this condition.

EXHIBIT 1 - NOISE COMPLAINT RESOLUTION FORM

Riverside Energy Resource Center Units 3 & 4
(08-SPPE-1)

NOISE COMPLAINT LOG NUMBER ________________________

Complainant's name and address:

Phone number: ________________________

Date complaint received: ________________________
Time complaint received: ________________________

Nature of noise complaint:

Definition of problem after investigation by plant personnel:

Date complainant first contacted: ________________________

Initial noise levels at 3 feet from noise source _________ dBA Date: _____________

Initial noise levels at complainant's property: __________ dBA Date: ____________

Final noise levels at 3 feet from noise source: ________ dBA Date: _____________

Final noise levels at complainant's property: __________ dBA Date: ____________

Description of corrective measures taken:

Complainant's signature: ________________________ Date: ____________

Approximate installed cost of corrective measures: $ ____________
Date installation completed: ____________
Date first letter sent to complainant: ____________ (copy attached)
Date final letter sent to complainant: ____________ (copy attached)

This information is certified to be correct:

Plant Manager's Signature: ________________________

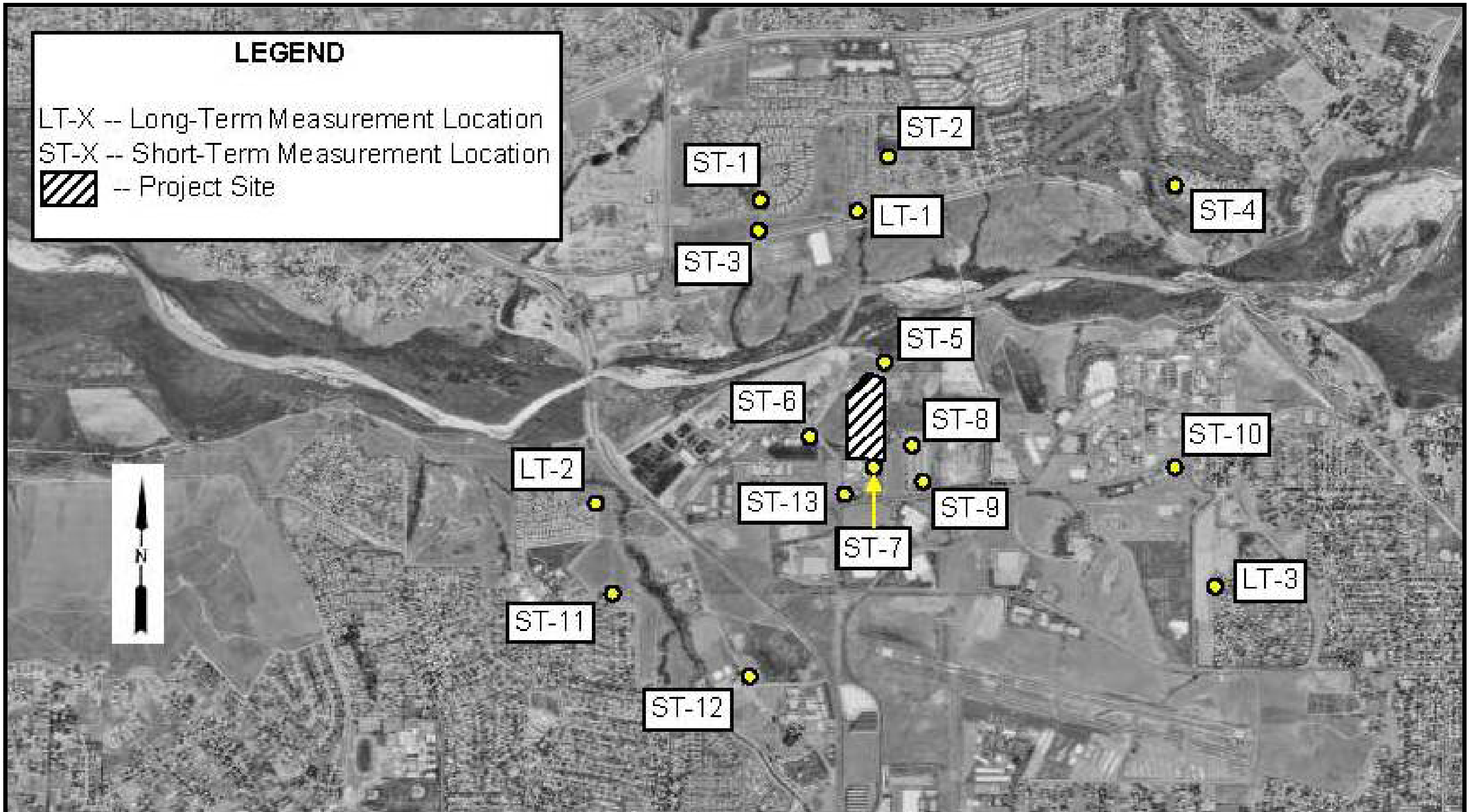
(Attach additional pages and supporting documentation, as required).

REFERENCES

RERC2008a – M. Tatterson/M. Jones (tn45678) Application for Certification of an SPPE dated 3/19/08. Submitted to Dockets 3/19/08.

NOISE AND VIBRATION - FIGURE 1

Riverside Energy Resource Center Units 3 & 4 - Noise Measurement Locations



CALIFORNIA ENERGY COMMISSION - ENERGY FACILITIES SITING DIVISION, AUGUST 2008

SOURCE: 08-SPPE-1, Figure 6.7-1

NOISE and VIBRATION APPENDIX A
FUNDAMENTAL CONCEPTS OF COMMUNITY NOISE

To describe noise environments and to assess impacts on noise sensitive area, a frequency weighting measure, which simulates human perception, is customarily used. It has been found that “A-weighting” of sound intensities best reflects the human ear’s reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. **NOISE Table A1** provides a description of technical terms related to noise.

Noise environments and consequences of human activities are usually well represented by an equivalent A-weighted sound level over a given time period (L_{eq}), or by average day and night A-weighted sound levels with a nighttime weighting of 10 dBA (L_{dn}). Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. Outdoor day-night sound levels vary over 50 dBA depending on the specific type of land use. Typical L_{dn} values might be 35 dBA for a wilderness area, 50 dBA for a small town or wooded residential area, 65 to 75 dBA for a major metropolis downtown (e.g., San Francisco), and 80 to 85 dBA near a freeway or airport. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, those higher levels nevertheless are considered to be levels of noise adverse to public health.

Various environments can be characterized by noise levels that are generally considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than the corresponding average daytime levels. The day-to-night difference in rural areas away from roads and other human activity can be considerably less. Areas with full-time human occupation that are subject to nighttime noise, which does not decrease relative to daytime levels, are often considered objectionable. Noise levels above 45 dBA at night can result in the onset of sleep interference effects. At 70 dBA, sleep interference effects become considerable (U.S. Environmental Protection Agency, Effects of Noise on People, December 31, 1971).

To help the reader understand the concept of noise in decibels (dBA), **NOISE Table A2** illustrates common noises and their associated sound levels, in dBA.

NOISE Table A1 Definition of Some Technical Terms Related to Noise	
Terms	**Definitions**
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this testimony are A-weighted.
L_{10}, L_{50}, & L_{90}	The A-weighted noise levels that are exceeded 10%, 50%, and 90% of the time, respectively, during the measurement period. L_{90} is generally taken as the background noise level.
Equivalent Noise Level, L_{eq}	The energy average A-weighted noise level during the noise level measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 4.8 decibels to levels in the evening from 7 p.m. to 10 p.m., and after addition of 10 decibels to sound levels in the night between 10 p.m. and 7 a.m.
Day-Night Level, L_{dn} or DNL	The Average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10 p.m. and 7 a.m.
Ambient Noise Level	The composite of noise from all sources, near and far. The normal or existing level of environmental noise at a given location.
Intrusive Noise	That noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.
Pure Tone	A pure tone is defined by the Model Community Noise Control Ordinance as existing if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the two contiguous bands by 5 decibels (dB) for center frequencies of 500 Hz and above, or by 8 dB for center frequencies between 160 Hz and 400 Hz, or by 15 dB for center frequencies less than or equal to 125 Hz.

Source: Guidelines for the Preparation and Content of Noise Elements of the General Plan, Model Community Noise Control Ordinance, California Department of Health Services 1976, 1977.

NOISE Table A2 Typical Environmental and Industry Sound Levels			
Noise Source (at distance)	A-Weighted Sound Level in Decibels (dBA)	Noise Environment	Subjective Impression
Civil Defense Siren (100')	140-130		Pain Threshold
Jet Takeoff (200')	120		Very Loud
Very Loud Music	110	Rock Music Concert	
Pile Driver (50')	100		
Ambulance Siren (100')	90	Boiler Room	
Freight Cars (50')	85		
Pneumatic Drill (50')	80	Printing Press Kitchen with Garbage Disposal Running	Loud
Freeway (100')	70		Moderately Loud
Vacuum Cleaner (100')	60	Data Processing Center Department Store/Office	
Light Traffic (100')	50	Private Business Office	
Large Transformer (200')	40		Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing

Source: Handbook of Noise Measurement, Arnold P.G. Peterson, 1980

Subjective Response to Noise

The adverse effects of noise on people can be classified into three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction.
- Interference with activities such as speech, sleep, and learning.
- Physiological effects such as anxiety or hearing loss.

The sound levels associated with environmental noise, in almost every case, produce effects only in the first two categories. Workers in industrial plants can experience noise effects in the last category. There is no completely satisfactory way to measure the subjective effects of noise or of the corresponding reactions of annoyance and dissatisfaction, primarily because of the wide variation in individual tolerance of noise.

One way to determine a person's subjective reaction to a new noise is to compare the level of the existing (background) noise, to which one has become accustomed, with the level of the new noise. In general, the more the level or the tonal variations of a new noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise will be, as judged by the exposed individual.

With regard to increases in A-weighted noise levels, knowledge of the following relationships can be helpful in understanding the significance of human exposure to noise.

1. Except under special conditions, a change in sound level of 1 dB cannot be perceived.

2. Outside of the laboratory, a 3-dB change is considered a barely noticeable difference.

3. A change in level of at least 5 dB is required before any noticeable change in community response would be expected.

4. A 10-dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response (Kryter, Karl D., The Effects of Noise on Man, 1970).

Combination of Sound Levels

People perceive both the level and frequency of sound in a non-linear way. A doubling of sound energy (for instance, from two identical automobiles passing simultaneously) creates a 3-dB increase (i.e., the resultant sound level is the sound level from a single passing automobile plus 3 dB). **NOISE Table A3** indicates the rules for decibel addition used in community noise prediction.

NOISE Table A3
Addition of Decibel Values

When two decibel values differ by:	Add the following amount to the larger value
0 to 1 dB	3 dB
2 to 3 dB	2 dB
4 to 9 dB	1 dB
10 dB or more	0
Figures in this table are accurate to ± 1 dB.	

Source: Architectural Acoustics, M. David Egan, 1988.

Sound and Distance

Doubling the distance from a noise source reduces the sound pressure level by 6 dB.

Increasing the distance from a noise source 10 times reduces the sound pressure level by 20 dB.

Worker Protection

OSHA noise regulations are designed to protect workers against the effects of noise exposure and list permissible noise level exposure as a function of the amount of time to which the worker is exposed, as shown in **NOISE Table A4**.

NOISE Table A4
OSHA Worker Noise Exposure Standards

Duration of Noise (Hrs/day)	A-Weighted Noise Level (dBA)
8.0	90
6.0	92
4.0	95
3.0	97
2.0	100
1.5	102
1.0	105
0.5	110
0.25	115

Source: 29 CFR § 1910.95.

PUBLIC HEALTH

Testimony of Obed Odoemelam, Ph.D.

INTRODUCTION

The purpose of this Public Health analysis is to determine if toxic emissions from the proposed Units 3 and 4 of the Riverside Energy Resource Center (RERC Units 3 & 4) will have the potential to cause significant adverse public health impacts or violate standards for public health protection in the project area. Toxic pollutants (or noncriteria pollutants) are pollutants for which there are no specific air quality standards. The other pollutants for which there are such air quality standards are known as criteria pollutants. If potentially significant health impacts are identified for the noncriteria pollutants considered in this analysis, staff would evaluate mitigation measures to reduce such impacts to less-than-significant levels.

The discussion in the **Air Quality** section mainly focuses on the potential for exposure above the applicable standards and the regulatory measures necessary to mitigate such exposures with particular emphasis on carbon monoxide, ozone, and particulate matter for which existing area levels exceed their respective air quality standards. The impacts on public and worker health from accidental releases of hazardous materials are examined in the **Hazardous Materials Management** section while the health and safety impacts from electric and magnetic fields are addressed in the **Transmission Line Safety and Nuisance** section. Pollutants released from the project in wastewater streams are discussed in the Soils and Water Resources section. Facility releases in the form of hazardous and non-hazardous wastes are addressed in the **Waste Management** section.

LAWS, ORDINANCES, REGULATION, AND STANDARDS

Public Health Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
Clean Air Act section 112 (42 U.S. Code section 7412)	Requires new sources which emit more than ten tons per year of any specified hazardous air pollutant (HAP) or more than 25 tons per year of any combination of HAPs to apply Maximum Achievable Control Technology (MACT).
State	
California Health and Safety Code sections 39650 et seq.	These sections mandated the California Air Resources Board (CARB) and the Department of Health Services to establish safe exposure limits for toxic air pollutants and identify pertinent best available control technologies (BACT). They also required that the new source review rule for each air pollution control district include regulations that require new or modified procedures for controlling the emission of toxic air contaminants.
California Health and Safety Code section 41700	This section states that “no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property.”
California Code of Regulations, Title 22, Section 60306	Requires that whenever a cooling system uses recycled water in conjunction with an air conditioning facility and a cooling tower that creates a mist that could come into contact with employees or members of the public, a drift eliminator shall be used and chlorine, or other, biocides shall be used to treat the cooling system re-circulating water to minimize the growth of Legionella and other micro-organisms.
Local	
South Coast Air Quality Management District Rule 1401	Requires safe exposure limits for Toxic Air Pollutants (TACs), use of best Available Control Technology (BACT) and New Sources Review (NSR).

ASSESSMENT OF IMPACTS

This section describes staff’s method of analyzing the potential health impacts of toxic pollutants together with the criteria used to determine their significance.

METHOD OF ANALYSIS

Staff's concern is about the toxic air contaminants to which the public could be exposed during project construction and routine operation. Following the release of toxic contaminants into the air or water, people may come into contact with them through inhalation, skin contact, or ingestion via contaminated food or water.

Since noncriteria pollutants do not specific air quality standards, a process known as health risk assessment is used to determine if people might be exposed to them at unhealthy levels. The risk assessment procedure consists of the following steps:

- Identification of the types and amounts of hazardous substances that sources could release to the environment;
- Estimating worst-case concentrations of project emissions into the environment using dispersion modeling;
- Estimating the amounts of pollutants to which people could be exposed through inhalation, ingestion, and dermal contact; and
- Characterizing the potential health risks by comparing worst-case exposure to safe standards based on known health effects.

Initially, a screening-level risk assessment is performed using simplifying assumptions that are intentionally biased toward protection of public health. That is, an analysis is designed that overestimates potential public health impacts from exposure to project emissions. In reality, it is likely that the actual risks from the source would be much lower than the risks estimated from the screening-level assessment. This conservative estimation is accomplished by examining conditions that would lead to the highest, or worst-case risks, and then assuming those conditions for the study. For the proposed Units 3 and 4, this approach involves:

- Using the highest levels of pollutants that could be emitted;
- Assuming weather conditions that would lead to the maximum ambient concentration of pollutants;
- Using the type of air quality computer model which predicts the greatest plausible impacts;
- Calculating health risks at the location where the pollutant concentrations are calculated to be the highest;
- Using health-based standards designed to protect the most sensitive members of the population (i.e., the young, elderly, and those with respiratory illnesses); and
- Assuming that an individual's exposure to cancer-causing agents occurs for 70 years.

A screening-level risk assessment would, at a minimum, include the potential health effects from inhaling hazardous substances. Some facilities may also emit certain substances that could present a health hazard from non-inhalation pathways of exposure (California Office of Environmental Health Hazard Assessment, OEHHA, 2003, Tables 5.1, 6.3, 7.1). When these substances are present in facility emissions, the screening-level analysis would include additional exposure pathways such as soil ingestion, dermal exposure, and mother's milk (OEHHA 2003, p. 5-3).

The risk assessment process addresses three categories of health impacts: acute (short-term) health effects, chronic (long-term) noncancer effects, and cancer risk (also long-term). Acute health effects result from short-term (1-hour) exposure to relatively high concentrations of pollutants. Acute effects are temporary in nature, and include symptoms such as irritation of the eyes, skin, and respiratory tract.

Chronic health effects are those which arise from long-term exposure to lower concentrations of pollutants. The exposure period is considered to be approximately from 12 to 100% of a lifetime, or from eight to 70 years (OEHHA 2003, p. 6-5). Chronic health effects include diseases such as reduced lung function and heart disease.

The analysis for noncancer health effects compares the maximum project contaminant levels to safe levels called "reference exposure levels" or RELs. These are the amounts of toxic substances to which nearly all people can be exposed and suffer no adverse health effects (OEHHA 2003, p. 6-2). These include sensitive members of the population such as infants, the aged, and people suffering from illness or disease, which makes them more sensitive to the effects of toxic substance exposure. RELs are based on the most sensitive adverse health effects reported in the medical and toxicological literature, and include specific margins of safety incorporated to address the uncertainties associated with inconclusive scientific and technical information available at the time of standard setting. They, therefore, are meant to provide a reasonable degree of protection against hazards that research has not yet identified. Each margin of safety is designed to prevent pollution levels that have been demonstrated to be harmful, as well as to prevent lower pollutant levels that may pose an unacceptable risk of harm, even if the risk is not precisely identified as to nature or degree. Health protection is assumed if the estimated worst-case exposure is below the relevant reference exposure level. In such a case, an adequate margin of safety is assumed to exist between the predicted exposure and the estimated threshold dose for toxicity.

Exposure to multiple toxic substances may result in health effects that are equal to, less than, or greater than effects resulting from exposure to the individual chemicals. Only a small fraction of the thousands of potential combinations of chemicals have been tested for the health effects of combined exposures. The health risk assessment assumes that the effects of each substance are additive for a given organ system (OEHHA 2003, pp. 1-5, 8-12). Other possible mechanisms from multiple exposures include those in cases where the actions may be synergistic or antagonistic (that is where the effects are greater or less than the sum, respectively). For these types of substances, the health risk assessment could underestimate or overestimate the risks.

For carcinogenic substances, the health assessment considers the risk of developing cancer and assumes that continuous exposure to the cancer-causing substance occurs over as long as a 70-year lifetime. The risk that is calculated is not necessarily meant to project the actual expected incidence of cancer, but rather as a theoretical upper-bound number based on worst-case assumptions. In reality, the risk would be generally too small to actually be measured. For example, a ten in one million maximum risk level represents a ten in one million increase in the normal risk of developing cancer over a lifetime, at whatever location is estimated to have the worst-case risk.

Cancer risk is expressed in terms of chances per million, and is a function of the maximum expected pollutant concentration, the probability that a particular pollutant will cause cancer (called a “potency factor” and established by OEHHA), and the length of the exposure period. Cancer risks for the individual carcinogens are added together to yield a total cancer risk for the source being considered. The conservative nature of the screening-level assumptions used means that actual cancer risks would likely be much lower than the estimates.

The screening analysis was performed for the proposed RERC Units 3 and 4 to assess the worst-case risks to public health as possible from their operation. Whenever the screening analysis predicts no significant risks, no further analysis would be required. However, if risks were above the significance level, then further analysis, using more site-specific assumptions, would be performed to obtain a more accurate assessment of the health risks in question.

SIGNIFICANCE CRITERIA

Commission staff assesses the health effects of exposure to toxic emissions based on potential impacts on the maximally exposed individual. This is a person hypothetically exposed to project emissions at a location where the highest ambient impacts were calculated using worst-case assumptions, as noted above.

As described earlier, noncriteria pollutants are evaluated for short-term (acute) and long-term (chronic) noncancer health effects, as well as cancer (long-term) health effects. The potential significance of project-related health impacts is determined separately for each of the three categories of health effects.

Acute and Chronic Noncancer Health Effects

Staff assesses the significance of noncancer health effects by calculating a “hazard index” for the exposures in question. A hazard index is a ratio obtained by comparing exposure from facility toxic emissions to the reference (safe) exposure level. A ratio of less than one signifies a worst-case exposure potentially below the safe level. The hazard indices for all toxic substances with the same types of health effect are added together to yield a total hazard index for all exposures. The total hazard index is calculated separately for acute and chronic effects. A total hazard index of less than one suggests that cumulative worst-case exposures would be less than the reference exposure levels (safe levels). Under these conditions, health protection would be assumed likely even for sensitive members of the population. In any such case, staff would assume that there would be no significant noncancer project-related public health impacts.

Cancer Risk

Staff relies upon regulations implementing the provisions of Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986 (Health & Safety Code, §§ 25249.5 et seq.) for guidance in assessing the potential for a significance cancer risk. Title 22, California Code of Regulations, § 12703(b) states that “the risk level which represents no significant risk shall be one which is calculated to result in one excess case of cancer in an exposed population of 100,000, assuming lifetime exposure." This level of risk is equivalent to an incremental cancer risk of ten in one million, or $10x10^{-6}$. An important distinction is that the Proposition 65 significance level applies separately to each cancer-causing substance, whereas staff determines significance based on the total risk from all cancer-causing chemicals. Thus, the manner in which the significance level is applied by staff is more conservative (health-protective) than that which applies to Proposition 65.

The South Coast Air Quality Management District (SCAQMD), which has jurisdiction over the project area, considers a risk of 25 in a million as the significance criterion in this regard. For new or modified sources with best available toxics best available control technology (TBACT), the District's significance criterion is 10 in a million but 1 in a million for those without such controls. The state's air pollution control districts would generally not approve a project with a cancer risk exceeding ten in one million.

As noted earlier, the initial risk analysis for a project is typically performed at a screening level, which is designed to overstate actual risks, so that health protection can be assured. When a screening-level analysis shows cancer risks to be above the significance level, using refined assumptions would likely result in a lower, more realistic risk estimate. If facility risk, based on refined assumptions, were to exceed the significance level of ten in one million, staff would require appropriate measures to reduce the risk to less than significant. If, after all risk reduction measures have been considered, a refined analysis identifies a cancer risk of greater than ten in one million, staff would deem such risk to be significant, and would not recommend project approval.

SETTING

This section describes the environment in the vicinity of RERC Units 3 and 4 from a public health perspective as discussed by the applicant, the Riverside Public Utilities (RPU). Features of the natural environment, such as meteorology and terrain, affect the project's potential for causing impacts on public health. For example, an emissions plume from a facility may impact elevated areas before lower terrain areas because of a reduced opportunity for atmospheric mixing. Consequently, areas of elevated terrain can often be subjected to increased pollutant impacts. Also, the types of land use near a site can influence the surrounding population distribution and density, which in turn, can affect public exposure to project emissions. Additional factors affecting potential public health impacts include existing air quality and site contamination.

SITE AND VICINITY DESCRIPTION

According to information from the applicant (RPU 2008a, pp. 6.8-1, and 6.14-1), the site of the proposed RERC Units 3 and 4 is a 2.2-acre portion of the approximately 16-acre fenced-in parcel adjacent to the City of Riverside's wastewater treatment plant in a light industrial/manufacturing area where there are only a few scattered residences. The nearest area with normal housing developments is approximately one half mile from the site. The terrain is flat with an elevation of approximately 725 feet above mean sea level. Bluffs of 800 feet are located immediately to the north, away from the populated areas (RPU 2008a, p 6.1-3).

As mentioned above, the location of sensitive receptors near any proposed project is an important factor in considering potential public health impacts. There are no such locations (schools, places of worship, medical facilities, convalescent homes, or day care facilities) within the 3,000 feet of potentially significant impacts identified by the applicant for all project operations (RPU 2008, p. 6.8-5). This means that an alternative choice for project location would not be appropriate on the basis of the special protection needs of sensitive receptors.

METEOROLOGY

Meteorological conditions, including wind speed, wind direction, and atmospheric stability, affect the extent to which pollutants are dispersed into ambient air as well as the direction of pollutant transport. These, in turn, affect the level of public exposure to emitted pollutants and associated health risks. When wind speeds are low and the atmosphere is stable, for example, dispersion is reduced and localized exposure may be increased.

As discussed by the applicant (RPU 2008a, p. 6.1-3) the climate at the project site is characterized by hot summers, mild winters, and little precipitation. This climate is dominated by the influence of mountains on three sides and the pacific high-pressure system, which is a semi-permanent, subtropical high-pressure system located over the Pacific Ocean. The size and strength of the Pacific High is at a maximum during the summer when it is at its northernmost position resulting in strong northwesterly air flows and negligible precipitation. During this period, inversions become strong, winds lighter, and the pollution potential high. The Pacific High's influence weakens during the fall and winter when it moves southwestward, allowing the storms from the Gulf of Alaska to reach northern California. About 80% of the region's annual rainfall occurs between November and March. During the winter, inversions are weak, winds often moderate, and the potential for air pollution is low.

Atmospheric stability is a measure related to turbulence, or the ability of the atmosphere to disperse pollutants due to convective air movement. Mixing heights (the height above ground level through which the air is well mixed and in which pollutants can be dispersed) are lower during mornings due to temperature inversions and increase during the warmer afternoons. Staff's **Air Quality** section presents a more detailed assessment of the area's meteorological conditions.

EXISTING AIR QUALITY

The site of the proposed RERC Units 3 and 4, as previously noted, is within the jurisdiction of the SCAQMD, which includes all portions of Los Angeles, Orange, Riverside and San Bernardino Counties. By considering average toxic concentration levels together with cancer risk factors specific to each carcinogen, lifetime cancer risk can be calculated to provide a background area risk level for inhalation of ambient air. Based, for example, on the levels of toxic air contaminants measured at the air toxics monitoring station in Rubidoux, Riverside County in 2000, the area's background cancer risk from emitted air toxics was calculated as 268 in one million (CARB 2002). The most important air toxics in this regard are from mobile vehicles and include 1, 3-butadiene, benzene and formaldehyde. Staff notes for comparison purposes that the overall lifetime cancer risk for the average individual in the U.S. is about 1 in 3, or 330,000 in a million.

SITE CONTAMINATION

Site disturbances will occur during facility construction from excavation, grading, and earth moving. Such activities have the potential to adversely affect public health through various mechanisms, such as the creation of contaminated dust, erosion-related transport of toxic materials to areas of human habitation, and chemical releases from buried containers.

A Phase I Environmental Site Assessment (ESA) was conducted at the RERC site on May 21, 2003, before construction of the adjacent Units 1 and 2 to identify any indications of chemical contamination that might have resulted from past industrial activities at the site. No such contamination was discovered suggesting the lack of risk from exposure to soil-borne chemicals during construction or other ground-disturbing activities (RPU 2008a, p. 6.14-16).

IMPACTS

The following Environmental Checklist identifies potential impacts to public health. Following the table is a discussion of the potential impacts and a discussion of proposed mitigation measures as necessary.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
PUBLIC HEALTH – Would the project cause the surrounding population to be exposed to airborne diseases and/or toxic air contaminants at levels hazardous to health during:				
A. Construction		X		
B. Operations		X		

ANALYSIS AND DISCUSSION OF IMPACTS

The proposed RERC Units 3 and 4 would be regarded as posing a significant risk to public health if they would cause the surrounding population to be exposed to airborne diseases and/or toxic air contaminants at levels capable of deleterious health impacts. The basis for the outcomes noted in the checklist is discussed below.

A. Construction: Less than Significant with Mitigation Incorporated

Potential risks to public health during construction may be associated with exposure to toxic substances in contaminated soil disturbed during site preparation, as well as from emissions from heavy equipment operation. Criteria pollutant impacts from such equipment and particulate matter from earth moving activities are examined in staff's **Air Quality** analysis. As noted above, the absence of on-site chemical contamination means that the construction and other ground-disturbing activities would not pose a significant risk of dust-related chemical exposure.

Construction equipment emissions would include both the noted criteria pollutants and the noncriteria pollutants, all of which are associated with diesel-fueled engines. The criteria component includes nitrogen oxides, carbon monoxide, and sulfur oxides. The noncriteria pollutant fraction includes diesel exhaust, a complex mixture of thousands of gases and fine particles. These particles are primarily made up of aggregates of spherical carbon particles coated with organic and inorganic substances. Studies have shown that diesel exhaust contains over 40 substances that are listed by the U.S. EPA as hazardous air pollutants and by the Air Resources Board (ARB) as toxic air contaminants.

Exposure to diesel exhaust can cause both short-term and long-term adverse health effects. The short-term effects can include increased coughing, labored breathing, chest tightness, wheezing, and eye and nasal irritation. Long-term effects can include increased coughing, chronic bronchitis, reductions in lung function, and inflammation of the lung. Epidemiological studies also suggest a strong causal relationship between occupational diesel exhaust exposure and lung cancer.

Construction of the proposed RERC Units 3 and 4 is anticipated to take place over a period of 9-months (RPU 2008a, p. 6.8-5, and Appendix 6.8-B). As noted earlier, assessment of chronic (long-term) health effects assumes continuous exposure to toxic substances over a significantly longer time period, typically from eight to 70 years.

Details of the exhaust emission levels for the varying construction activities were also provided (RPU 2008a pp. 6.1-40 through 6.1-43 and 6.8-4). The main sources would include trucks, graders, cranes, welding machines, electric generators, air compressors, and water pumps. The maximum carcinogenic risk from exposure to diesel emissions during these 9-month construction activities is estimated as approximately 0.1 in one million, which is significantly below the 10 in one million level considered significant by staff and under SCAQMD guidelines.

The applicant has specified the measures necessary for the mitigation of the cancer and noncancer impacts of the construction activities (RPU 2008a, pages 6.1-43, 6.1-44 and 6.8-2). Staff has determined that with the implementation of these measures, the project's construction impacts on public health would be insignificant.

B. Operation: Less than Significant with Mitigation Incorporated

Emissions Sources

The major emissions sources for the proposed RERC Units 3 and 4 are their gas turbines and shared cooling tower (RPU 2008a, pp. 6.8-4 and 6.8-5). During operations, potential public health risks would be related to the products of natural gas combustion and trace contaminants present in the non-potable water emitted through this cooling tower.

As noted earlier, the first step in a health risk assessment is to identify the potentially toxic compounds that may be emitted from the facility. The applicant has provided a listing of the noncriteria pollutants that may be emitted along with the toxicity values used to characterize cancer and noncancer health impacts from project pollutants (RPU 2008a, Appendix 6.8-C). It is from these that the short-term and long-term noncancer health risk can be calculated along with the potential cancer risk. Public Health Table 1 lists toxic emissions and itemizes the potential health impacts of each. For example, the first row shows that oral exposure to acetaldehyde is not of concern, but if inhaled, the chemical may have cancer and chronic (long-term) noncancer health effects, but not acute (short-term) effects.

Emissions Levels

Once potential emissions are identified, the first step is to quantify them by conducting the previously noted “worst case” analysis to assess the need for further analysis. Maximum hourly emissions are required to calculate acute (one-hour) noncancer health effects, while estimates of maximum emissions on an annual basis are required to calculate cancer and chronic (long-term) noncancer health effects.

PUBLIC HEALTH Table 1
Types of Health Impacts and Exposure Routes Attributed to Toxic Emissions

Substance	Oral Cancer	Oral Noncancer	Inhalation Cancer	Noncancer (Chronic)	Noncancer (Acute)
Acetaldehyde			3	3	
Acrolein				3	3
Ammonia				3	3
Benzene			3	3	
Chromium		3	3	3	
1,3-Butadiene			3		
Ethylbenzene				3	
Hexane				3	
Formaldehyde			3	3	3
Napthalene		3		3	
PAHs	3		3		
Propylene				3	
Propylene oxide			3	3	3
Sulfate					3
Toluene				3	
Xylene				3	3
Diesel Particulate			3	3	

Source: RPU 2008a, Appendix 6.8-B.

The next step in the health risk assessment process is to estimate the ambient concentrations of toxic substances in question. For the proposed Units 3 and 4, air dispersion modeling was used to estimate the ambient concentrations of these substances. These the ambient concentrations were then used in conjunction with RELs and cancer unit risk factors to estimate health effects, which might occur from exposure to facility emissions. Exposure pathways include inhalation, dermal (through the skin) absorption, soil ingestion, consumption of locally grown plant foods, and mother's milk.

Impacts

The screening health risk assessment for Units 3 and 4, including combustion and noncombustion emissions, resulted in a maximum acute hazard index of 0.085. The chronic hazard index at the point of maximum impact is 0.002. As Public Health Table 2 shows, both of these acute and chronic hazard indices are far below the reference exposure level of 1.0, indicating that no short-term or long-term adverse health effects are expected.

PUBLIC HEALTH Table 2
Operation Hazard/Risk

Type of Hazard/Risk	Hazard Index/Risk for Project	Standard/ Significance Level	Significant?
Acute Noncancer	0.085	1.0	No
Chronic Noncancer	0.002	1.0	No
Individual Cancer	0.106×10^{-6}	10×10^{-6}	No

Source: RPU 2008a, pages 6.8-4 and 6.8-5.

Total worst-case individual cancer risk from facility operation as shown in Public Health Table 2 is estimated to be 0.106 in one million. As discussed earlier, this is the risk at the location where long-term pollutant concentrations are calculated to be the highest for either turbine or cooling tower emissions.

Cooling Tower

In addition to the toxic emissions from the cooling tower, the possibility exists for the growth of pathogenic bacterial the most important of which is *Legionella*, which is ubiquitous in natural aquatic environments and is also widely distributed in man-made water systems. It is the principal cause of legionellosis, otherwise known as Legionnaires' disease, which is similar to pneumonia. Transmission to humans results mainly from inhalation or aspiration of aerosolized contaminated water. Untreated or inadequately treated cooling systems, such as industrial cooling towers and building heating, ventilating, and air conditioning systems, have been correlated with outbreaks of legionellosis. The Cooling Technology Institute (CTI 2000) found that 40-60% of industrial cooling towers tested were found to contain Legionella.

Legionella can grow symbiotically with other bacteria and can infect protozoan hosts. The U.S. EPA noted that Legionella survival is enhanced by symbiotic relationships with other microorganisms, particularly in biofilms (layers of bacteria that are typically loosely attached to a surface) and that aerosol-generating systems such as cooling towers can aid in the transmission of *Legionella* from water to air (EPA 1999). This provides Legionella with protection from adverse environmental conditions, including making it more resistant to water treatment with chlorine, biocides, and other disinfectants. Thus, if not properly maintained, cooling water systems and their components can amplify and disseminate aerosols containing *Legionella.*

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) concluded that “Design and good operations, maintenance, and housekeeping procedures that prevent amplification and dissemination of *Legionella* should be formulated and implemented before systems are operated” (ASHRAE 1998). The CTI stated that “it is best to assume that any given system can harbor the organism, and that routine, continuous microbiological control practices should be implemented to minimize the risk of Legionella amplification and associated disease” (CTI 2000). Staff notes that most power plant cooling tower water treatment programs are designed to minimize scale, corrosion, and biofouling, and not to control *Legionella.*

To minimize the risk from *Legionella*, the CTI noted that consensus recommendations included minimization of water stagnation, minimization of process leads into the cooling system that provide nutrients for bacteria, maintenance of overall system cleanliness, the application of scale and corrosion inhibitors as appropriate, the use high-efficiency mist eliminators on cooling towers, and the overall general control of microbiological populations.

The applicant proposes to use a cooling tower biocide for bacterial control as with the cooling tower for the existing Units 1 and 2 (RPU 2008a, p. 6.8-2). As with other anti-microbial agents, the efficacy in ensuring that bacterial, and in particular *Legionella* growth, is kept to a minimum, depends on a number of factors including proper dosage amounts, appropriate application procedures and effective monitoring. Staff has therefore proposed Condition of Exemption Public Health-1 that would require the project owner to implement a biocide and anti-biological growth agent-monitoring program as currently used for the existing Units 1 and 2. The program would ensure that proper levels of biocide and other agents are maintained within the cooling tower water at all times, that periodic measurements of Legionella levels are conducted, and that periodic cleaning is conducted to remove bio-film buildup. Staff believes that with the use of an aggressive antibacterial program coupled with routine monitoring and bacteria removal, the chances of *Legionella* growing and dispersing would be reduced to less than significant.

CUMULATIVE IMPACTS

The maximum impact location would be where pollutant concentrations from the proposed Units 3 and 4 would theoretically be the highest. Even at this location, staff does not expect any significant change in lifetime risk to any person, and the increase of 0.106 in a million does not represent any real contribution to the noted average lifetime cancer risk of 330,000 in a million which includes the contribution from operation of the existing Units 1 and 2. Modeled facility-related risks are lower at all other locations, and actual risks are expected to be much lower, since worst-case estimates are based on conservative assumptions, and overstate the true magnitude of the risk expected.

Therefore, staff does not consider the incremental impact of the additional risk posed by the proposed Units 3 and 4 to be either significant or cumulatively considerable when considered together with the risk contributions from the existing Units 1 and 2.

The worst-case chronic noncancer health impact from the proposed Units 3 and 4 (of 0.002 hazard index) is well below the significance level of 1.0 at the location of maximum impact. Similarly, the worst-case acute health impact of 0.085 is below the significance level of 1.0. At these levels, staff does not expect any contribution to the area's cumulative impacts to be considerable. Such cumulative impacts would include the impacts from operating the existing Units 1 and 2. As with cancer risk, long-term hazard would be lower at all other locations and cumulative impacts at other locations would also be less than significant. With the implementation of **Public Health-1**, staff would not expect the operation of Units 3 and 4 to contribute significantly to the cumulative impacts of cooling tower-related emissions which include those from the existing Units 1 and 2.

CONCLUSIONS

Staff has analyzed potential public health risks associated with construction and operation of the proposed RERC Units 3 and 4 and does not expect there to be any significant adverse cancer, or short or long-term noncancer health effects from project emissions. Implementation of staff's proposed condition of exemption would ensure that the risk of *Legionella* growth and dispersion is reduced to less than significant.

PROPOSED CONDITION OF EXEMPTION

Public Health-1: The project owner shall develop and implement a Cooling Water Management Plan to ensure that the potential for bacterial growth in Units 3 and 4's cooling water is kept to a minimum. The Plan shall be consistent with either Staff's "Cooling Water Management Program Guidelines" or with the Cooling Technology Institute's "Best Practices for Control of *Legionella*" guidelines.

<u>Verification:</u> At least 30 days prior to the commencement of cooling tower operations, the Cooling Water Management Plan shall be provided to the Compliance Project Manager for review and approval.

REFERENCES

ASHRAE 1998. American Society of Heating, Refrigeration, and Air Conditioning Engineers Legionellosis: Position Statement. June 25.

CARB 2001. California Air Resource Board. California Air Quality Data, http://www.arb.ca.gov/aqd/aqd.htm.

CTI 2000. Cooling Technology Institute. Guidelines: Best Practices for Control of *Legionella*.

EPA 1999. Environmental Protection Agency, November. (EPA-822-R-99-001) "*Legionella*: Human Health Criteria Document."

OEHHA 2003. Office of Environmental Health Hazard Assessment. Air Toxics Hot Spots Program Risk Assessment Guidelines. The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. August.

RPU (Riverside Public Utility) 2008a. Application for Small Power Plant Exemption. Submitted to the Energy Commission on April 26, 2004.

RPU (Riverside Energy Resource Center) 2004b. Applicant's Phase 1 Environmental Site Assessment. Submitted to the California Energy Commission on June 8, 2004.

SRP 1998. Scientific Review Panel on Toxic Air Contaminants. Findings of the Scientific Review Panel on the Report on Diesel Exhaust as adopted at the Panel's April 22, 1998 Meeting.

Title 22, California Code of Regulations, March 20, 2001.

SOCIOECONOMICS

Testimony of Joseph Diamond

INTRODUCTION

This California Energy Commission (Energy Commission) staff socioeconomic impact analysis evaluates the project induced changes on community services and/or infrastructure and related community issues such as Environmental Justice (EJ) and facility closure. Direct, indirect, induced, and cumulative impacts are also included. Staff discusses the estimated impacts of the construction and operation of the Riverside Energy Resource Center Units 3&4 (RERC) Project (CEC 2008a) for 95 megawatts (MWs) project on local communities, community resources, and public services, pursuant to Title 14, California Code of Regulations, Section 15131. The RERC 3&4 power plant will be owned and operated by City of Riverside Public Utilities (RPU), a local public agency.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

SOCIOECONOMICS Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
State	
California Education Code, Section 17620	The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.
California Government Code, Sections 65996-65997	These sections include provisions for school district levies against development projects. As amended by Senate Bill (SB) 50 (Stats. 1998, ch. 407, sec. 23), these sections state that except for those fees established under Education Code 17620, public agencies at the state and local level may not impose fees, charges, or other financial requirements to offset the cost for school facilities.

SETTING

DEMOGRAPHIC CHARACTERISTICS

The project site is located within the City of Riverside, Riverside County. The study area will consist of the Riverside/San Bernardino County Metropolitan Statistical Area (MSA).

Riverside County population was 1,545,387 in 2000 and is projected to be 2,904,845 in 2020, almost doubling. The Riverside County population growth rate from 2000-2020 is higher than the statewide growth rate over that time period. San Bernardino County was 1,709,434 in 2000 and is projected to be 2,581,371 in 2020 which is also higher than the statewide growth rate over that time period. **SOCIOECONOMICS Table 1** shows the historical and projected populations for the study area and the state.

SOCIOECONOMICS Table 1
Historical and Projected Populations

Area	2000 Population	2010 Population	2020 Population
Riverside County	1,545,387	2,239,053	2,904,848
San Bernardino County	1,709,434	2,177,596	2,581,371
California	33,871,648	39,135,676	44,135,923

Source: CEC 2008a.

SOCIOECONOMICS Table 2 shows the minority and low-income populations within the six-mile radius of the proposed project, Riverside and San Bernardino Counties, and the state.

SOCIOECONOMICS Table 2
2000 Minority and Persons below Poverty Level

Area	% Minority	% Persons below poverty level
Six-mile radius	57.46	14.99
City of Riverside	54.4	15.8
Riverside County	49.0	14.2
San Bernardino County	44.0	15.8
California	53.30	14.2

Source: California Energy Commission Statewide transmission and power plant maps 2006. Census 2000 PL-171 Data-Matrix PL2. and US Census 2000.

The minority population within six-miles of the site is 57.46%, which is somewhat higher than the 54.4% minority population of the City of Riverside and the state. The population below the poverty level is 14.99% within six miles of the site, which is lower than the 15.8% for the City of Riverside and somewhat more than that of the state.

EMPLOYMENT AND ECONOMY

SOCIOECONOMICS Table 3 shows employment data for the study area and the state. Data from the Employment Development Department (EDD) show that the unemployment rate for Riverside County is higher than the unemployment rate for the state while San Bernardino County is equal to the state.

SOCIOECONOMICS Table 3: Employment Data January 2008 (Preliminary)

Area	Labor Force	Employment	Unemployment	Unemployment Rate (%)
Riverside County	916,000	852,000	64,200	7.0
San Bernardino County	889,700	833,400	56,300	6.3
California	18,244,000	17,085,000	1,158,200	6.3

Source: EDD 2008 (Riverside and San Bernardino Counties and California not seasonally adjusted).

Data from the RPU application (Table 6.12-6) for 2006 show that the highest employment sectors in Riverside County are services (41%), retail trade (13.6%) and construction (12.7%). Data from the RPU application (Table 6.12-7) for 2006 show that the highest employment sectors in San Bernardino County are services (48%), retail trade (12.7%), manufacturing (11.1%), and construction (9.6%). Construction is an important sector in Riverside and San Bernardino counties totaling 194,692 workers (CEC 2008a). The labor pool, the Riverside/San Bernardino MSA, is largely within 60 miles of the project site. This area has a large population, including a labor force with adequate members of the trades required for construction of an energy facility.

PROJECT WORK FORCE

Construction Work Force

According to the RPU application, construction of the RERC 3&4 facility would require nine months of labor, average of approximately 60 workers on-site, and require a maximum of 100 workers during the fifth (peak) month of construction. The tentative schedule would begin in the first quarter of 2009.

SOCIOECONOMICS Table 4 shows the distribution of workers by craft and month required for the construction. **SOCIOECONOMICS Table 5** shows the annual averages, the average growth rate for the trades in Riverside/San Bernardino MSA, and the maximum needed by the RERC 3&4 per month. According to the RPU application and labor data obtained from the EDD, there is generally sufficient labor force available in the Riverside/San Bernardino MSA to find the required construction trades.

SOCIOECONOMICS: Table 4
Project Monthly Construction Labor By Craft

Job Category	1st Month	2nd Month	3rd Month	4th Month	5th Month	6th Month	7th Month	8th Month	9th Month
Insulation Workers							3	3	2
Welders		2	4	6	6	4	2	1	
Carpenters	3	6	8	8	8	6	4	1	
Electricians		6	8	10	12	12	6	3	2
Ironworkers		4	8	8	10	8	4		
Laborers	4	4	10	17	27	30	20	8	2
Millwrights			2	4	4	4	2	1	1
Operating Engineers (Industrial Engineers)	3	3	5	5	5	5	5	3	1
Painters							2	4	4
Pipe fitters	2	2	4	8	12	12	10	7	4
Craft Subtotal	12	27	49	66	84	81	58	31	16
Construction Manager	5	5	5	5	5	5	5	5	5
Field Engineer	1	1	3	6	6	6	6	4	2
Document Control Clerical	2	2	2	2	2	2	2	2	2
Commissioning Group					3	4	6	6	6
Staff Subtotal	8	8	10	13	16	17	19	17	15
Total Project	20	35	59	79	100	98	77	48	31

Source: CEC 2008a.

SOCIOECONOMICS: Table 5
Available Labor by Skill in the Riverside/San Bernardino MSA Region per Year and Maximum Needed By RERC 3&4 per Month

Occupational Title	2008 Annual Average (Estimated)	Maximum Needed Per Month
Insulation Workers	230	3
Carpenters	26,250	8
Electricians	8,020	12
Ironworkers	1,790	10
Laborers	2,000	30
Millwrights	230	4
Operating Engineers / Industrial Engineers	600	5
Painters/Construction and Maintenance	4,130	4 painters
Plumbers, Pipe fitters, and Steamfitters	4,120	12 pipe fitters

Field Engineers	*n/a	6
Document Control Clerical	2,210	2
Commission Group	*n/a	6

Source: EDD 2003 and CEC 2008a. * not available.

Staff accepts the applicant's position that the Riverside/San Bernardino MSA is the local labor market and most if not all would be local workers for construction and operation (CEC 2008a).

Plant Operations Workforce

According to the application, RERC 3&4 would use no more than five full-time employees to operate and maintain the power plant, which has an expected life of 30 years, and the transmission line.

IMPACTS

Following is the Environmental Checklist that identifies potential impacts in this issue area. Below the checklist are a discussion of each impact and an explanation of the impact conclusion.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
SOCIOECONOMICS: POPULATION, HOUSING, AND ECONOMIC (FISCAL AND NON-FISCAL)-- Would the project:				
A. Have substantial non-fiscal effects on employment and economy?				x
B. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				x
C. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				x
D. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				x
E. Have substantial fiscal effects on local government expenditures, property and sales taxes?				x
F. Have a significant minority or low-income population within a six-mile radius that may be subject to disproportionate adverse effects of the project?				x
Public Services – Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered facilities, the construction of which could cause significant environmental impacts, or result in an inability to maintain acceptable service ratios, response times, or other performance objectives for the following:				
G. police protection?				x
H. schools?				x
I. medical and other public services and facilities?				x

DISCUSSION OF IMPACTS

A. Non-Fiscal Effects on Employment and Economy: No Impact

The proposed RERC 3&4 would require approximately nine months for construction, average of approximately 60 workers on-site, and require a maximum of 100 workers during the fifth (peak) month of construction. The applicant and staff agree that most if not all construction and operational workers are expected to reside in the Riverside/San Bernardino MSA, and, if necessary, additional workers can commute from surrounding counties and regions (CEC 2008a). Research shows that construction workers may commute as much as two-hours one way from their communities rather than relocate (Electric Power Research Institute 1982). A good part of Riverside and San Bernardino counties are within a two-hour one way commute. A small number of construction workers may require temporary lodging in the Riverside/San Bernardino MSA. According to current data from the EDD, sufficient numbers of workers within the specialty trades needed for project construction reside in the Riverside/San Bernardino MSA. Thus, the project would not directly or indirectly cause a significant impact on local employment resources in the area.

Income and employment multiplier analysis is not reported here since numbers directly attributable to the RERC 3&4 project were not provided. However, secondary construction economic analysis from similar projects in the study area is reported in a footnote to **Socioeconomic Data and Information Table 2**. Operation multiplier impacts were not addressed by the applicant and are expected to be minimal (CEC 2008a).

B. Induced Population Growth: No Impact

For reasons listed in **A.** above, staff does not expect any major in-migration of construction workers. For those that do in-migrate, it is unlikely their families would accompany them for this project. Staff agrees with the applicant that construction employment would be short term (nine months) and would unlikely result in a change in permanent population in the project vicinity or region (CEC 2008a). Operational employment is low and may induce a very small population increase. Thus, the project would not directly or indirectly induce substantial population growth in the area.

C. Displacement of Housing: No Impact

Staff does not expect housing to be displaced because of the project. Sufficient vacant housing exists if any construction workers seek temporary housing for the nine-month construction period. According to the 2006 US Census, total housing stock for Riverside County totaled 732,433. The vacancy rate was 12.1% (CEC 2008a). Also, there are 150 hotels/motels located within 25 miles of the City of Riverside (RERC 1&2 2004). An average of only approximately 60 workers would be on-site during construction. Construction workers and workers in the specialty trades are largely available within the Riverside/San Bernardino MSA. Some workers may commute from surrounding counties and regions. A few workers may require temporary lodging which should be available from hotel/motel or rental units. Staff does not expect any construction workers to relocate to the area.

The proposed RERC 3&4 is not likely to significantly alter the location, distribution, density, or growth rate of the population of the City of Riverside, or Riverside County since construction impacts are of short duration and only five new full-time employees would be hired to operate the facility.

D. Displacement of People: No Impact

No housing or population would be displaced by the proposed project.

E. Fiscal Effects on Local Government Expenditures, Property and Sales Tax: No Impact

The applicant estimates the RERC 3&4 total project cost to be approximately $110 million, with the value of materials and supplies purchased locally (within the Riverside/San Bernardino MSA) estimated at about $5 to $10 million. All economic estimates are in 2007 dollars (RERC 2008d). Because RERC 3&4 is a local public agency, it is exempt from property taxes. Therefore, the project would not generate any property tax revenues for Riverside County.

F. Minority or Low-Income Populations: No Impact

Staff has reviewed Census 2000 information that shows the minority population is greater than 50% within a six-mile radius of the proposed RERC 3&4 (please refer to **Socioeconomics Figure 1** in this Initial Study), and Census 2000 information that shows the low-income population is less than 50% within the same radius. Because there are no significant adverse socioeconomic impacts, there are no environmental justice issues.

G. Police Protection: No Impact

Because there would be little or no in-migration of construction workers, staff does not expect significant socioeconomic adverse impacts to police services. Furthermore, the Riverside Police Department response time is likely to be rapid since they provide 24 hour/7 day a week patrol coverage (Clark and Lincoln 2004, per. comm.). They have 345 sworn officers and 206 non-sworn employees. The entire RERC 3&4 site perimeter is fenced with a combination of chain fencing and architectural block walls (CEC 2008a). Finally, RERC 3&4 is a small project that is not likely to provide much demand for police protection. Overall, it has been common for power plants to not need much law enforcement assistance. This has been typical for law enforcement in siting cases before the Energy Commission.

H. Schools: No Impact

There would be little or no in-migration of construction worker families and staff does not expect significant impacts to schools. Also, RERC 3&4 is a local public agency, and is exempt from school impact fees. Therefore, the project would not be required to pay school impact fees normally assessed for commercial and industrial projects under Senate Bill 50.

I. Medical and Other Public Services: No Impact

Emergency Medical Service (EMS) would be provided by the City of Riverside Fire Department which has a goal of a response rate of within seven minutes and

American Medical Response, a private contractor, less than 11 minutes. Victims are generally taken to Riverside Community Hospital, or occasionally, Kaiser Hospital, Parkview Hospital, or rarely Riverside Medical Center (CEC 2008a). The City of Riverside has 51 parks, nine community centers, and seven pools (City of Riverside 2008).

Because there would be little or no in-migration of construction workers and their families and the operation workforce would be small and mainly from Riverside and San Bernardino counties with little indirect population impacts, staff does not expect significant adverse socioeconomic impacts to medical and other public services such as parks and recreation.

CUMULATIVE IMPACTS

Staff research for a cumulative worse-case peak construction workforce scenario found that there were eight power plants in Riverside and San Bernardino counties with a workforce of 4,351. Given a 2006 construction workforce of 194,692 in Riverside and San Bernardino counties, this result in only approximately 2.2%. In addition, there are thirteen other projects some which involve energy (wind farms and transmission lines) most are public infrastructure, private sector residential and other economic development (Sun Valley Energy Project 2005, Sentinel 2007, and Victorville 2 2007).

The construction of the power plants would require some crafts that are not required by the other projects such as millwrights, operating engineers, and boilermakers, however, there are many crafts required of most construction projects such as carpenters, electricians, and laborers etc. Nevertheless, if Riverside and San Bernardino counties were solely relied upon, there could possibly be some short-term shortages of labor of labor and equipment (Sentinel 2007). However, access to the Los Angeles Metropolitan Division which had 160,350 construction and extraction workers in 2004 (CAEDD 2008) and the Las Vegas-Paradise MSA (Clark County, Nevada) construction workforce of 101,500 in 2005 (Brightsource Ivanpah 2007) would provide additional supplies of labor. For the four-county area this would result in a revised worse-case peak construction workforce scenario of less than one percent.

Furthermore, RERC 3&4 is a relatively small power plant project with no significant adverse socioeconomic impacts. Therefore, staff concludes that there are no significant cumulative adverse socioeconomic impacts.

CONCLUSIONS

RERC 3&4 is a small power plant with no significant adverse socioeconomic impacts. Hence, staff concludes that there are no direct, indirect, or cumulative significant adverse socioeconomic impacts. Because there are no adverse socioeconomic impacts, there are no environmental justice impacts. However, there are positive socioeconomic benefits such as construction and operation payroll, locally purchased equipment and material, and sales tax.

PROPOSED CONDITIONS OF EXEMPTION

None proposed.

SOCIOECONOMIC DATA AND INFORMATION – TABLE 2[1]

Total Project Costs	$110 million
Estimate of Locally Purchased (Within Riverside/San Bernardino MSA) **Equipment and Material**	
Construction	About $5-10 million
Operation	*n/a
Estimated Annual Property Taxes	None. Exempt since RERC 3&4 is a local public agency.
Estimated School Impact Fees	None. Exempt since RERC 3&4 is a local public agency.
Direct Employment	
Construction (Average)	Approximately 60 jobs
Operation	5 jobs
Secondary Employment (indirect and induced impacts)	
Construction	Estimated to be 30 to 60 workers.[2]
Operation	*n/a
Payroll (For the Riverside/San Bernardino MSA)	
Construction	Total: $6.8 million
Operation	*n/a
Estimated Sales Taxes	
Construction	Total: approximately $4.3 million (City of Riverside 1% or $550,000, Riverside County 0.5% or $275,000, and the State of California 6.25% or $3,437,500) (RERC 2008d).
Operation	n/a
Existing/Projected Unemployment	Existing – 7.0% in January 2008, (not

[1] Table 2 uses 2007 dollars (RERC 2008d) and construction is for 9 months.

[2] The applicant's estimate uses an employment multiplier for the construction phase of the RERC 3&4 that is 1.5 to 2 derived from secondary sources in Riverside and San Bernardino counties. Staff finds this acceptable since it is close to a range of 1.2 to 2.5 for multipliers that many economists find acceptable in the long run (Moss et al. 1994) and for Social Accounting Matrix (SAM) multipliers 1.5 to 2.5 (Mulkey 2000). However, staff does not know which economic impact model (or models) or economic multiplier(s) (Type I-direct plus indirect impacts or Type II-direct plus indirect plus induced impacts) was used. A workforce of approximately 60 workers was used for the estimate of secondary workers. The economic impact analysis estimate is for the two-county region of the Riverside/San Bernardino MSA based on similar projects in Riverside and San Bernardino counties. Most of the economic impact would be in Riverside County and especially the City of Riverside (CEC 2008a). Staff's estimate for the RERC 3&4 construction phase employment multiplier is based on eight power plant projects in Riverside and San Bernardino counties and is approximately 2.5. It also uses an employment multiplier of approximately 2.4 if four projects were used for economic impacts that were calculated for either Riverside or San Bernardino counties. This would result in secondary impacts of approximately 84 to 90 jobs and a total of approximately 144 to 150 total jobs when compared to the applicant's estimate of secondary impacts of approximately 30 to 60 jobs and 90-120 total jobs. Hence, the applicant underestimated the secondary gross employment benefits while still not resulting in any significant adverse socioeconomic impacts. There were no significant adverse socioeconomic impacts on community services or infrastructure because most if not all of the labor force would be drawn from Riverside and San Bernardino counties and those workers who relocate would be on a work week basis without their families staying in available housing including hotels/motels.

Rates	seasonally adjusted for Riverside County, 6.3 (not seasonally adjusted for San Bernardino County), and 6.3 (not seasonally adjusted for California). (Preliminary estimate.) Projected - n/a
Percent Minority Population (6 mile radius)	57.46%
Percent Poverty Population (6 mile radius)	14.99%

* not available.

REFERENCES

California Employment Development Division. 2008. Occupational Employment Projections 2004-2014 Los Angeles-Long Beach Metropolitan Statistical Area (Los Angeles County).

California Energy Commission Statewide transmission and power plant maps 2006. Census 2000 PL-171 Data Matrix PL2.

CEC 2008a – CEC/M. Jones (tn45678), Application for Certification of an SPPE Dated 8/19/08. Submitted to dockets 3/19/08.

City of Riverside. 2008. Parks, Recreation and Community Services, June 19, 2008. http:www.riverside.gov/park_rec/facilities.asp

Clark, David and Kevin Lincoln. 2004. Economist and RERC Project Manager. Telephone Conversation with Dr. Joseph Diamond (California Energy Commission), May 3.

Electric Power Research Institute. 1982. Socioeconomics of Power Plants.

Employment Development Department, State of California. 2003. Internet Website, http://www.calmis.ca.gov and http://www.lmi4ed.ca.gov.

Employment Development Department, State of California. 2008. Report 400C Monthly Labor Force data For December-2007 Not Seasonally Adjusted.

Moss, Steven J., Richard J. McCann, and Marvin Feldman. 1994. A Guide for Reviewing Environmental Policy Studies. Spring.

Mulkey, David and Alan Hodges. 2000. Using Implan to Assess Economic Impacts. University of Florida IFAS Extension FE 168.

RERC (Riverside Energy Resource Center) Units 1&2 2004: Application for Small Power Plant Exemption. Submitted to the California Energy Commission on April 26, 2004.

RERC 2008d – PE/M. Tatterson (tn46637) Data Request Responses 1-71. Submitted to Dockets 6/6/08.

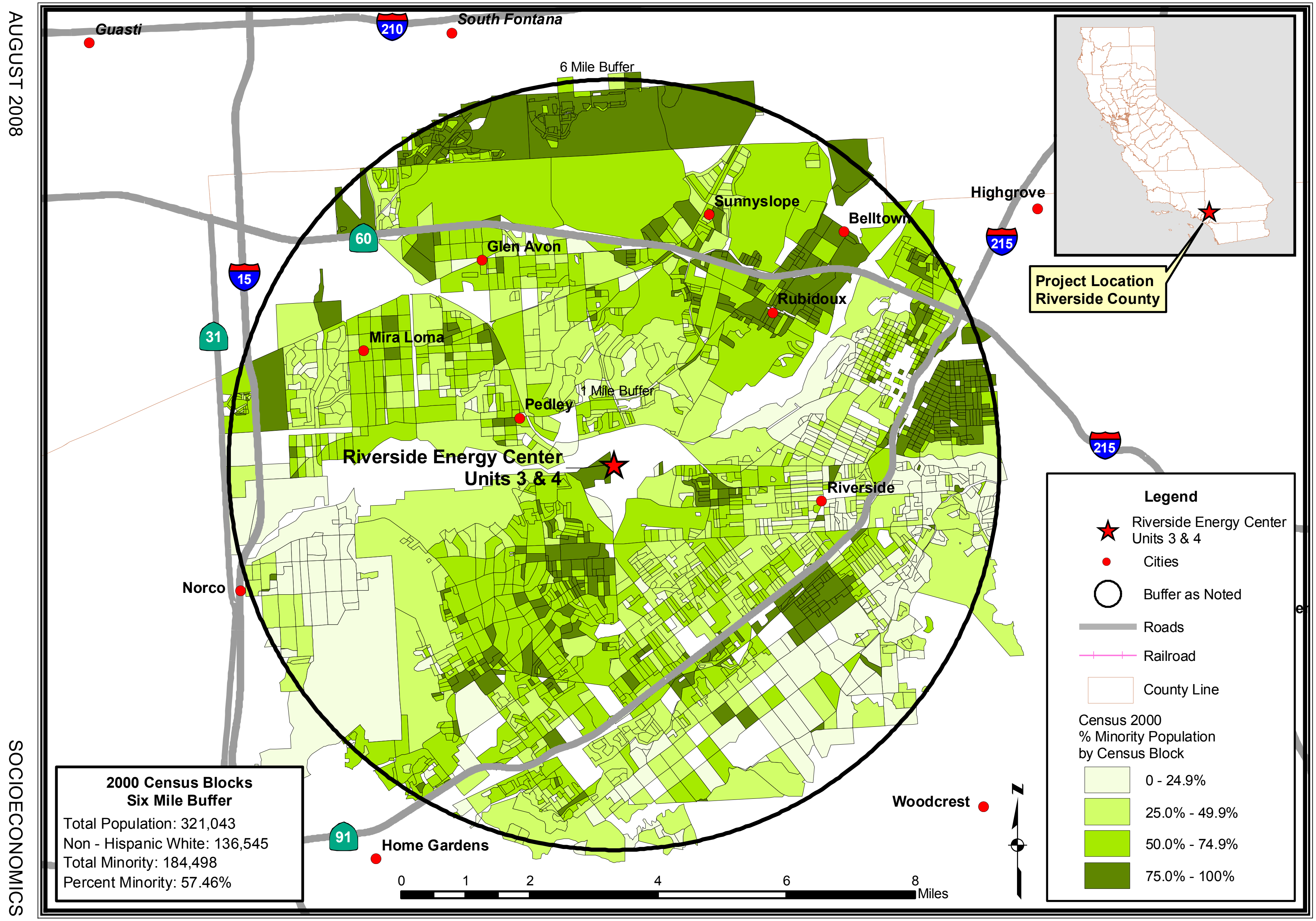
Sentinel. 2007. Application For Certification (07-AFC-3) Volumes I-III. Submitted to the California Energy Commission on June 25, 2007.

Sun Valley Energy Project. 2005. Application For Certification (05-AFC-3) Volume I. Submitted to the California Energy Commission on December 1, 2005.

United States Bureau of the Census. 2000 Census of Population and Housing. WebPages http://venus.census.gov.

Victorville 2 Hybrid Power Project (Victorville 2). 2007. Application For Certification (07-AFC-1) Volumes I&II. Submitted to the California Energy Commission on February 27, 2007.

SOCIOECONOMICS - FIGURE 1
Riverside Energy Center Units 3 & 4 - Census 2000 Minority Population by Census Block - Six Mile Buffer



CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, AUGUST 2008
SOURCE: California Energy Commission Statewide Power Plant Maps 2008 - Census 2000 PL 94-171 Data - Matrix PL2

SOIL AND WATER RESOURCES

Testimony of Casey Weaver, PG

SUMMARY OF CONCLUSIONS

Staff has not identified any unmitigable significant impacts to Soil and Water Resources provided the proposed conditions of exemption are met. The following are staff's findings based on its preliminary assessment of the proposed Riverside Energy Resource Center Units (RECR) 3 & 4:

- Implementation of Best Management Practices (BMPs) during RECR 3 &4 construction and operation in accordance with effective Storm Water Pollution Prevention Plans would avoid significant adverse effects that could be caused by transport of sediments or contaminants from the project site by wind or water erosion;
- The proposed water supply for the project would not cause a significant adverse environmental impact or affect current or future users of water or adversely impact biological resources, and is consistent with state water use and conservation policies;
- The proposed project would be constructed outside the 100-year floodplain and would not exacerbate flood conditions in the vicinity of the project;
- Potential degradation from process waste water to surface water or groundwater quality would be mitigated through the development, construction and implementation of an effective zero liquid discharge system; and
- The proposed project would comply with all applicable federal, state and local laws, ordinances, regulations and standards and potentially significant impacts would be mitigated through the preparation and implementation of various construction and operating plans and compliance with local ordinances.

INTRODUCTION

This section analyzes potential impacts to soil and water resources from the construction or operation of the Riverside 3 & 4 facility. The analysis specifically focuses on the potential for the project to cause impacts in the following areas:

- Whether construction or operation will lead to accelerated wind or water erosion and sedimentation.
- Whether the project will exacerbate flood conditions in the vicinity of the project.
- Whether the project's water use would cause a substantial, or potentially substantial, adverse change in the quantity or quality of groundwater or surface water.
- Whether project construction or operation will lead to degradation of surface or groundwater quality.
- Whether the project will comply with all applicable laws, ordinances, regulations and standards (LORS).

Where the potential for impacts is identified, staff has proposed mitigation measures to reduce the significance of the impact and, as appropriate, has recommended conditions of exemption.

LAWS, ORDINANCES, REGULATION, AND STANDARDS

SOIL & WATER Table 1
Laws, Ordinances, Regulations, and Standards

Federal LORS	
Clean Water Act (33 U.S.C. Section 1251 et seq.)	The Clean Water Act (33 USC § 1257 et seq.) requires states to set standards to protect water quality, which includes regulation of storm water discharges during construction and operation of a facility.
Resource Conservation and Recovery Act	The Resource Conservation Recovery Act (RCRA) of 1976 (40 CFR Part 260 et seq.) seeks to prevent surface and groundwater contamination, sets guidelines for determining hazardous wastes, and identifies proper methods for handling and disposing of those wastes.
Farmland Protection Policy Act	The Farmland Protection Policy Act requires the assessment of the project impacts on farmlands.
State LORS	
California Water Code Section 13260	Requires filing with the appropriate Regional Board a report of waste discharge that could affect the water quality of the state, unless the requirement is waived pursuant to Water Code section 13269.
California Water Code Section 13551	Requires the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such water is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare.
California Water Code Section 13552.6	Specifically identifies the use of potable domestic water for cooling towers, if suitable recycled water is available, as a waste or unreasonable use of water. The availability of recycled water is determined based on criteria listed in Section 13550 by the State Water Resources Control Board. (SWRCB).
Local LORS	
City of Riverside, General Plan Goal WQ1 - Policy 1.2	Water resources should be utilized in a manner that does not deplete the supply of groundwater. Efforts to conserve local and imported water supplies should be encouraged.
City of Riverside, General Plan Goal SD 1 - Policy 1.3	The City shall require all development proposals to include storm water drainage system plans that are compatible with master drainage plans adopted by the City.
State Policies and Guidance	
California Constitution, Article X, Section 2	This section requires that the water resources of the State be put to beneficial use to the fullest extent possible and states that the waste, unreasonable use or unreasonable method of use of water is prohibited.
The Porter-Cologne Water Quality Control Act of 1967, Water Code Sec 13000 et seq.	Requires the State Water Resources Control Board (SWRCB) and the nine RWQCBs to adopt water quality criteria to protect state waters. Those regulations require that the RWQCBs issue Waste Discharge Requirements specifying conditions for protection of water quality as applicable.
State Water Resources Control Board (SWRCB) Res. 77-1	State Water Resources Control Board Resolution 77-1 encourages and promotes recycled water use for non-potable purposes.
SWRCB Resolutions 75-58 and 88-63	The principal policy of the SWRCB that addresses the specific siting of energy facilities is the Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling (adopted by the Board on June 19, 1976, by Resolution 75-58). This policy states that use of fresh inland waters should only be

	used for power plant cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound. Resolution 75-58 defines brackish waters as “all waters with a salinity range of 1,000 to 30,000 mg/l” and fresh inland waters as those “which are suitable for use as a source of domestic, municipal, or agricultural water supply and which provide habitat for fish and wildlife”. In a May 23, 2002 letter from the Chairman of the SWRCB to CEC Commissioners, the principal of the policy was confirmed ‘that the lowest quality cooling water reasonably available from both a technical and economic standpoint should be utilized as the source water for any evaporative cooling process utilized at these facilities’. Resolution 88-63 defines suitability of sources of drinking water. The total dissolved solids must exceed 3,000 mg/L for it to not be considered suitable, or potentially suitable, for municipal or domestic water supply.
SWRCB WQO 99-08	The SWRCB regulates storm water discharges associated with construction projects affecting areas greater than or equal to 1 acre to protect state waters. Under Order 99-08, the SWRCB has issued a National Pollutant Discharge Elimination System (NPDES) General Permit for storm water discharges associated with construction activity for which applicants can qualify if they meet the criteria and upon preparing and implementing an acceptable Storm Water Pollution Prevention Plan (SWPPP) and notifying the SWRCB with a Notice of Intent.
California Code of Regulations, Title 17	Title 17, Division 1, Chapter 5, addresses the requirements for backflow prevention and cross connections of potable and non-potable water lines.
California Code of Regulations, Title 22	Title 22, Division 4, Chapter 15, requires the California Department of Public Health (DPH) to review and approve the waste water treatment systems to ensure they meet tertiary treatment standards allowing use of reclaimed water for industrial processes such as steam production and cooling water. DHS also specifies Secondary Drinking Water Standards in terms of Consumer Acceptance Contaminant Levels, including TDS ranging from a recommended level of 500 mg/l, an upper level of 1,000 mg/l and a short term level of 1,500 mg/l.
California Code of Regulations, Title 23	Title 23, Division 3, Chapter 15, requires the Regional Board issue Waste Discharge Requirements specifying conditions for protection of water quality as applicable.
Recycling Act of 1991 (Water Code 13575 et. seq)	States that retail water suppliers, recycled water producers, and wholesalers should promote the substitution of recycled water for potable and imported water in order to maximize the appropriate cost-effective use of recycled water in CA.
California Water Code (CWC) Section 13146	Requires that state offices, departments and boards in carrying out activities, which affect water quality, shall comply with state policy for water quality control unless otherwise directed or authorized by statute, in which case they shall indicate to the State Water Resources Control Board in writing their authority for not complying with such policy.
CWC Section 13523	Requires that a Regional Board, shall prescribe water reuse requirements for water, which is to be used or proposed to be used as recycled water after consultation with and upon receipt of recommendations from the State DPH, and if it determines such action to be necessary to protect the public health, safety, or welfare.
CWC Section 13550	Requires the use of recycled water for industrial purposes subject to recycled water being available and upon a number of criteria including: provisions that the quality and quantity of the recycled water are suitable for the use, the cost is reasonable, the use is not detrimental to public health, and the use will not impact downstream users or biological resources.
CWC Section 13552.8	States that any public agency may require the use of recycled water in cooling towers if recycled water is available, meets the requirements set forth in Section 13550, that there will be no adverse impacts to any existing water right and that if public exposure to cooling tower mist is possible, appropriate mitigation or control is provided.
The California Safe	This Act (California Health & Safety Code Section 25249.5 et seq.) prohibits

Drinking Water and Toxic Enforcement Act	actions contaminating drinking water with chemicals known to cause cancer or possessing reproductive toxicity. The Regional Water Quality Control Board administers the requirements of the Act.
Integrated Energy Policy Report (Public Resources Code, Div. 15, Section 25300 et seq)	In the 2003 IEPR, consistent with State Water Resources Control Board Policy 75-58 and the Warren-Alquist Act, the Energy Commission adopted a policy stating they will approve the use of fresh water for cooling purposes by power plants only where alternative water supply sources and alternative cooling technologies are shown to be "environmentally undesirable" or "economically unsound."

SETTING

The proposed RERC 3 & 4 project is described in detail in the Application for Small Power Plant Exemption (SPPE) (RERC2008a). The site is located south of and above the Santa Ana River Valley. The RERC 3 & 4 would be constructed on 2.2 acres of the existing 16-acre RERC site located adjacent to the Riverside Regional Water Quality Control Plant (RRWQCP). The proposed units would be located immediately north of existing RERC Units 1 & 2 and to the east of the RRWQCP. The remaining rough graded, undeveloped portion of the RERC site (approximately 5 acres) would be used for construction laydown. Construction parking would take place immediately west of the proposed project site in the same area used for the construction of Units 1&2.

The project would be a peaking facility consisting of two aero-derivative combustion turbine generators. The project would also include two more bays to the existing RERC switchyard, the addition of two demineralized water storage tanks to the existing make-up water system, a new dispatch and scheduling building for RPU, and a water laboratory. After construction, the area used for construction parking and equipment storage would be available for other uses.

SOILS

The project site is the bottom of a former rock quarry. As much as 30 feet of soil and rock was removed from the southern and eastern portion of the property with less removed from the northern and western portions. Extensive grading of the site has resulted in the removal of all native soil. The ground surface is now covered with a thin veneer of artificial fill left over from the grading operations.

In general, the thin, loose soil material covering the ground surface is primarily composed of rocky, silty sand. This loose soil material has a low to moderate water erosion potential. The applicant proposes to apply water during construction as the primary Best Management Practice (BMP) to limit erosion from wind and vehicular traffic.

STORM WATER

The average annual rainfall in the Riverside area is approximately 10 inches (RERC2008a). To mitigate construction–related impacts from any potential storm water events, grading and construction would be sequenced to minimize the amount and duration of soil exposed to the environment at any one time. In addition to minimizing the exposed soil, site development would include installation of erosion control BMPs. Temporary (construction-phase) BMPs would be designed to control runoff from a ten year storm event. Where necessary, soil erosion and sediment control measures would be in place at the onset of soil disturbing activities.

Post construction (operation-phase) storm water control would be incorporated into the existing storm water collection system. The existing storm water collection system captures non-contact site runoff in drop inlets and swales and conveys the collected water to a “storm water detention/infiltration basin”. The storm water detention/infiltration basin was sized to contain more than the difference in runoff volume between pre- and post-development of the site for a 50-year storm event lasting one hour.

Storm water that could potentially come in contact with hydrocarbons would be conveyed by underground piping to an oil/water separator prior to treatment. RERC 3 & 4 equipment areas that possess a potential for storm water contamination, such as the chemical storage areas or transformer areas, would be designed with secondary containment basins to prevent contaminants from entering the storm water system. The ammonia tank and generator step-up transformer containment basins are designed with sump pumps to prevent discharge of contaminated water to the storm water system. RERC 3 & 4 process water that may be contaminated would be collected and sent to an oil-water separator and then recycled for plant use. The design would prevent this water from being discharged to the storm water collection system.

GROUND WATER

The City of Riverside gets approximately 99% of its water supply from 49 groundwater wells located within the County boundary. The remaining 1% comes from the Western Municipal Water District (WMWD), a Riverside County agency. The groundwater wells are recharged by rain and snowfall in the Bunker Hill and Riverside Drainage Basins. Total annual water use in the City in 2006 was 66,300 acre feet. Groundwater is pumped from these wells and distributed for municipal use (industrial and residential) through a system of underground pipelines. During previous geotechnical evaluations at the site, perched groundwater was encountered at depths ranging from 11 to 26 feet beneath the existing ground surface in 15 of 29 exploratory borings distributed across the site.

Construction dewatering is not anticipated. Groundwater was encountered at a minimum depth of 11 feet beneath the existing ground surface during the original geotechnical investigation. The applicant does not expect to excavate down to 11 feet beneath ground surface.

The City of Riverside Public Utilities Water Department that would supply water to the site indicated they have no wells in the site area. The Western Municipal Water District indicated there are no wells in the site area as there is no true groundwater table at the site due to the shallow bedrock. The shallow groundwater at the site is the result of infilling of cracks and fissures (RERC2008a).

SURFACE WATER

The site is situated at an elevation of approximately 725 feet above mean sea level with a slight slope downward towards the northwest. Geographical boundaries include the Santa Ana Mountains to the south and west, the San Gabriel and San Bernardino

Mountains to the north and the Santa Ana River approximately ¼-mile north of the site. There are no surface water features on the project site. Surface water from the site currently flows into the WWTP. The Federal Emergency Management Agency (FEMA) has mapped the project area and linear features as being located outside the 100-year flood hazard zone. The flood zone for the Santa Ana River is bounded by the project's northern boundary (RERC2008a).

WATER SUPPLY AND USE

The peak water demand for Units 3 & 4 is estimated at approximately 215 gallons per minute (gpm) based on a 100% load at ambient temperatures of 115^{o}F. The majority of plant operation would occur during summer periods when electrical demands are highest for air conditioning requirements. The summer use design case is based on a 100% load at ambient temperatures of 100^{o}F using 185.36 gpm of water for 16 hours of operation per day. In the design case, the water consumption was determined to be 0.178 million gallons per day (RERC2008a). The estimated annual volume of water required for the project if both CTGs each run for 1230 hours per year is 24.4 million gallons per year (75 acre-feet per year (RERC2008a).

Process water uses include combustion turbine water injection for NOx control and increased power generation through spray intercooling (SPRINT power augmentation), turbine water wash and cooling tower make up (RERC2008a). Potable water would be used for domestic purposes and fire fighting requirements.

SWRCB Resolution 75-58 requires that power plant cooling water should come from (in order of priority): waste water being discharged to the ocean, ocean water, brackish water from natural sources or irrigation return flow, inland waste waters of low total dissolved solids, or other inland waters where feasible. RERC 3 & 4 proposes to use recycled water. The use of recycled water for power plant cooling is consistent with Resolution 75-58, Chapter 7 of the California Water Code and the 2003 Integrated Energy Policy Report (IEPR).

The proposed RERC 3 & 4 would use tertiary treated (recycled) waste water supplied by the RRWQCP located adjacent to the project site for all process water needs and landscape watering.

Currently, recycled water is delivered to an existing 300,000 gallon raw water storage tank. The raw water is drawn from the raw water tank to make demineralized water on a batch basis which is stored in a 300,000 gallon demineralized water tank. Prior to startup of Units 3 & 4, two additional 300,000 gallon demineralized water tanks would be constructed to store a sufficient volume of demineralized water for the proposed project.

Potable water for sanitary use would come directly from the City of Riverside's general water supply. During construction of RECR 1 & 2, a separate connection to the City's potable water system, with an approved backflow preventer, was made to supply potable water for sanitary and fire suppression uses at the facility. The connection points for the potable and fire suppression water supply are at Acorn Avenue, approximately 60 feet from the southwest corner of the site. The estimated volume of potable water required for toilets and sinks is 12,000 gallons per year (RERC2008a).

WASTE WATER DISCHARGE

Process Waste Water

RERC 3 & 4 would generate waste water primarily from cooling tower blowdown and demineralized water treatment. Relatively minor contributions would come from process equipment wash downs and water system tank overflows. Waste water from the equipment wash down areas (i.e., CTG, fuel gas compressor and ammonia vaporizer) with the potential to contain floatable oil and settleable solids would be conveyed to a below grade coalescing oil-water separator. After removal of floatable oils and settable solids, the waste water from the oil-water separator would be pumped to the waste water storage tank where it would combine with waste water from cooling tower blow down and demineralized water treatment area drains. A zero liquid discharge (ZLD) system would treat process waste water and thus eliminate process waste water discharge from the facility.

The proposed ZLD system would utilize a conventional water softener, and a high efficiency Reverse Osmosis (RO) system, followed by a final crystallizer. The process involves sending waste water to a water softener system upstream of the RO system to remove hardness and alkalinity. The ZLD final waste product would be a highly concentrated liquid brine waste that would be trucked off-site for proper disposal.

Other Waste Streams

While process waste water is the primary waste water stream associated with the project, other discharges include domestic/sanitary waste and storm water. Domestic sanitary waste water (e.g., toilets, showers, sinks) would be discharged to the City's domestic waste water system. The RRWQCP has sufficient capacity for receiving the domestic waste from the RERC facility. The sanitary wastes produced at the proposed addition to the RERC facility would not result in any significant impacts to the existing sewer system.

The finished plant site would be covered with either concrete roadways or compacted gravel surfacing. The non-contact plant site drainage would be directed by surface flow to an existing storm water retention/infiltration basin located at the low side of the site.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

This section provides an evaluation of the expected direct, indirect and cumulative impacts to soil and water resources that would be caused by construction, operation and maintenance of the project. Staff's analysis of potential impacts consists of a brief description of the potential effect, an analysis of the relevant facts, and application of the threshold criteria for significance to the facts. If mitigation is warranted, staff provides a summary of the applicant's proposed mitigation and a discussion of the adequacy of the proposed mitigation. If necessary, staff presents additional or alternative mitigation measures and refers to specific conditions of exemption related to a potential impact and the required mitigation measures. Mitigation is designed to reduce the effects of potentially significant project impacts to less than significant.

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Impacts leading to soil erosion or depletion of local/regional water supplies are among those staff believes could be most potentially significant associated with the proposed project. Staff evaluated the potential impacts to soil resources including the effects of construction and operation activities that could result in erosion of soils, the deposition of sediments into surface waters or the contamination of either groundwater or surface water. There are extensive regulatory programs in effect designed to prevent or minimize these types of impacts. Our experience with these programs has demonstrated that they are effective. Therefore, absent unusual circumstances, we conclude that if an applicant is required to identify and implement Best Management Practices (BMPs) these impacts will be less than significant. Soils can be adequately protected by development and implementation of a proper Storm Water Pollution Prevention Plan (SWPPP) for both construction and operational phases of the project. The LORS and Policies presented in **Soil & Water Table 1** were used to determine the significance of project impacts for this proceeding.

Staff also evaluated the potential of the project's proposed water use to cause:

- Substantial depletion or degradation of local or regional surface water supplies, particularly fresh water, or
- Substantial depletion or degradation of groundwater supplies or substantial interference with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

DIRECT/INDIRECT IMPACTS AND MITIGATION

The direct and indirect impact and mitigation discussion presented below is divided into a discussion of impacts related to construction and a discussion of impacts related to operation. For each potential impact evaluation, staff briefly describes the potential effect and applies the threshold criteria for significance to its analysis of the facts. If mitigation is warranted, staff provides a summary of the applicant's proposed mitigation and a discussion of the adequacy of the proposed mitigation. In the absence of an applicant-proposed mitigation or if mitigation proposed by the applicant is inadequate, staff mitigation measures are recommended. Staff also provides specific conditions of exemption related to a potential impact and the required mitigation measures.

CONSTRUCTION IMPACTS AND MITIGATION

Construction of the RECR 3 & 4 would include soil excavation, grading, installation of utility connections and the use of water, primarily for dust suppression. Potential impacts to soils related to increased erosion or release of hazardous materials are possible during construction. Potential storm water impacts could result if increased runoff flow rates and volume discharges from the site were to increase flooding downstream. Water quality could be impacted by discharge of eroded sediments from the site, discharge of hazardous materials released during construction, or migration of existing hazardous materials present in the subsurface soil and groundwater. Project water demand could affect quantity of groundwater or surface water resources.

Potential construction related impacts to soil, storm water, and water quality or quantity, including the applicant's proposed mitigation measures and staff's proposed mitigation measures are discussed below.

Water Supply and Use

During construction, recycled waste water would be used to meet all of the projects non-potable water demands, including dust suppression and soil compaction. Potable water would be supplied to existing buildings by the City of Riverside. Use of recycled water would not have a significant impact on groundwater or surface water resources. Condition of Exemption **Soil & Water-1** ensures conformance with LORS and requires that all non-potable water use for plant construction and operation (including cooling and landscape irrigation) would be recycled waste water.

Storm Water and Soil Erosion Potential

Construction activities can lead to adverse impacts to soil resources including increased soil erosion, soil compaction, loss of soil productivity, and disturbance of soils crucial for supporting vegetation or wetlands. Activities that expose and disturb the soil leave soil particles vulnerable to detachment by wind and water. Soil erosion results in the loss of topsoil and increased sediment loading to nearby receiving waters or sewer systems.

The magnitude, extent and duration of those impacts would depend on several factors, including the proximity of the RECR site to surface water, the soils affected, and the method, duration, and time of year of construction activities. Prolonged periods of precipitation, or high intensity and short duration runoff events coupled with earth disturbance activities can result in on-site erosion. In addition, high winds during grading and excavation activities can result in wind borne erosion leading to increased particulate emissions that adversely impact air quality. The implementation of appropriate erosion control measures will help conserve soil resources, maintain water quality, prevent accelerated soil loss, and protect air quality. Condition of Exemption **Soil & Water-2** requires the project owner to prepare plans for implementing, monitoring and maintaining BMPs appropriate for the construction phase as required under SWRCB's NPDES permit program.

OPERATION IMPACTS AND MITIGATION

Operation of RECR 3 & 4 could lead to potential impacts to soil, storm water runoff, water quality, water supply, and wastewater treatment. Soils may be potentially impacted through erosion or the release of hazardous materials used in the operation of RECR 3 & 4. Storm water runoff from the site could result in potential impacts if increased runoff flow rates and volumes discharged from the site increase downstream flooding. Water quality could be impacted by discharge of eroded sediments from the RECR 3 & 4 site, or by discharge of hazardous materials released during operation. Water supply for plant processes, cooling, fire protection and landscape irrigation could lead to potential quantity or quality impacts to regional groundwater or surface water resources. Potential impacts to soil, storm water, water supply, and wastewater related to the operation of the RECR 3 & 4, including the applicant's proposed mitigation measures and staff's proposed mitigation measures, are discussed below.

Agricultural Soils

The RERC project site is currently zoned Manufacturing Park and is not currently being used for agriculture nor has it been farmed in the recent past. The site is not subject to the Williamson Act and the use of this site for the project would not have an impact on zoning. This project would not result in the removal of land from agriculture. The project has proposed to use BMP's to control wind and water soil erosion. These BMP's would be incorporated into the Storm Water Pollution Prevention Plans (SWPPPs) that are required for construction and industrial operations. The project would not result in significant soil loss from the site. Staff concludes there are no significant adverse cumulative soils or agricultural impacts associated with this project.

Storm water

Staff has reviewed the applicant's conceptual plans for controlling storm water drainage to assure that appropriate BMPS are identified to avoid degradation of water quality from erosion or contact with contaminants. The 2.2 acre project site would be lightly sloped and surfaced with equipment and foundations, paving, gravel and landscaping. Non-contact areas of the power block (where there is not potential for contamination from hazardous materials) would be graded to drain to the northwest and southeast by means of sheet flow away from equipment foundations and into swales, inlets and/or storm sewer pipes along the perimeter of the power block. At the north and south sides of the power block, the runoff would then be conveyed eastward by ditches and culverts into the sediment/storm water retention facility. Following settlement of suspended sediments and attenuation of peak flows, storm water would either infiltrate into the ground, evaporate or in the case of runoff exceeding design flow, discharge into an existing depression immediately east of the site. During operation, the capacity of the sediment/storm water retention facility would be maintained by performing sediment removal as needed.

Contact areas (in the vicinity of oil-filled transformers and hazardous materials storage) would drain into a separate collection system and be conveyed through an oil-water separator before it is conveyed to the cooling tower for reuse. Secondary containment structures would be built around the oil-filled equipment and hazardous materials to prevent dispersion in case of a spill. Solid wastes and small amounts of hazardous waste that are generated would be properly accounted for, tracked, handled, and disposed of off-site using licensed transporters and disposal facilities. Condition of Exemption **Soil & Water-3** requires the project owner to prepare plans for implementing, monitoring and maintaining BMPs appropriate for the operating phase as required under SWRCB's NPDES permit program.

The overall potential for soil loss from water erosion is minimal since proposed activities would occur within previously developed and disturbed areas that receive an average of 10 inches of rainfall annually. In addition, all construction activities would employ mitigation and sedimentation/erosion control measures consistent with construction Best Management Practices (BMPs). Due to the soil types of the project site, problems with loss of soil from project development are not anticipated. BMPs would be imposed after construction to minimize the potential for soil erosion and sedimentation associated with operation of RERC 3 & 4. These BMPs would be implemented to prevent erosion and sedimentation from exposed soil areas during precipitation events and to minimize the potential for significant soil movement from the project site.

Water Supply and Use

During operation, recycled waste water would be used to meet all of the projects non-potable water demands, including process needs and landscaping requirements. It is estimated that the annual project operation of RECR 3 & 4 will use approximately 75 acre-feet of recycled waste water per year. Potable water for sanitary use would be supplied to existing buildings by the City of Riverside general water supply. Use of recycled water would not have any significant impact on groundwater or surface water resources. Condition of Exemption **Soil & Water-1** ensures conformance with LORS and requires that all non-potable water use for plant construction and operation (including cooling and landscape irrigation) would be recycled waste water.

Waste Water

The applicant proposes two separate waste water-collection systems for Riverside 3 & 4. The first is the process waste water system, which collects all waste water generated from operation of the plant and delivers it to the zero liquid discharge (ZLD) system. The ZLD System would recover about 90% of the waste water for reuse by Riverside 3 & 4, and would concentrate the solids into a high saline liquid for disposal at an approved disposal site. Condition of Exemption **Soil & Water-4** requires that the concentrated brine be characterized and appropriately classified prior to removal so that adequate disposal of the waste is assured.

Power plant discharges consisting of leakage and drainage from facility containment areas would be collected in a system of floor drains, sumps, and pipes within the Riverside 3 & 4 facility and discharged to an oil/water separator. The oil-free water would be reused in the power production cycle.

The second waste water-collection system proposed by the applicant is the sanitary system. The sanitary system would collect waste water from sinks, toilets, and other sanitary facilities for discharge to the existing sewer system that conveys the sewage to the neighboring waste water treatment facility. No significant water or soil related impacts are expected due to waste water.

CUMULATIVE IMPACTS

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. “Cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects [CCR 2008, §15065(A)(3)]. Cumulative impacts represent impacts that result, directly or indirectly, from project-related activities over the life of the project. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over time in the same area.

In addition to the proposed RECR 3 & 4, other closely related existing or planned projects in the area include: 1) continued operation of the contiguous RECR Units 1 & 2 and 2) continued operation of the RRWQCP located adjacent to the project site.

Construction and operation of the proposed RECR 3 & 4 would result in both temporary and permanent changes at the project site. These changes could incrementally increase local soil erosion and storm water runoff. Potential project-related soil or storm water cumulative impacts could be reduced to a level of insignificance through implementation of the applicant's SWPPPs for the Construction and Industrial Activities NPDES permits which are consistent with applicable erosion and storm water management LORS. At this time, no cumulative water supply impacts are anticipated from construction and operation of RECR 3 & 4. The supply of recycled water from RRWQCP would be sufficient to meet the needs of the project and other existing or potential users. Use of recycled water would also preclude use of freshwater for industrial process use thus making more freshwater available for other beneficial uses.

COMPLIANCE WITH LORS

The project would comply with:

- The Clean Water Act and the authority granted to the State to enforce coverage under the NPDES by the Santa Ana Regional Water Quality Control Board to administer the requirements and preparation of the SWPPPs and WQMP;
- California Constitution, administered by the State Water Resources Control Board to assure wasting or unreasonable uses of water are avoided.
- The use of recycled water is consistent with the Warren-Alquist Act and the California Energy Commission 2003 IEPR water policy.

CONCLUSIONS

With the information provided to date for RECR Units 3 & 4, staff has not identified any unmitigable significant impacts to Soil and Water Resources provided the proposed conditions of exemption are met. The following are staff's findings based on its preliminary assessment of the proposed Riverside 3 & 4 project:

- Implementation of Best Management Practices (BMPs) during construction and operation of RECR 3 & 4 in accordance with effective Storm Water Pollution Prevention Plans and a Drainage, Erosion and Sedimentation Control Plan would avoid significant adverse effects that could be caused by transport of sediments or contaminants from the project site by wind or water erosion;
- The proposed water supply for the project would not cause a significant adverse environmental impact or affect current or future users of City of Riverside water, and is consistent with state water use and conservation policies;
- The proposed project would be constructed outside the 100-year floodplain and would not exacerbate flood conditions in the vicinity of the project;
- Potential degradation from process waste water to surface water or groundwater quality would be mitigated through the development and implementation of an effective zero liquid discharge system; and
- The proposed project would comply with all applicable federal, state and local laws, ordinances, regulations and standards and potentially significant impacts would be mitigated through the preparation and implementation of various construction and operating plans and compliance with local ordinances.

Staff concludes that there would not be any significant adverse impacts to soil and water resources because of the proposed Riverside 3 & 4 Project, provided the proposed conditions of exemption are implemented.

PROPOSED CONDITIONS OF EXEMPTION

SOIL & WATER-1: RECR 3 & 4 shall use recycled water for all non-potable plant construction and operation uses including cooling and landscape irrigation. The RECR 3 & 4 shall comply with all requirements of Title 22 and Title 17 California Code of Regulations. Prior to delivery of recycled water to the RECR 3 & 4 for any purpose, the owner shall submit a Title 22 Engineer's Report and copies of any review comments from the review by the Department of Public Health (DPH) and the Santa Ana Regional Water Quality Control Board (RWQCB), for review and approval by the CPM.

Verification: Prior to beginning any site mobilization activities, the project owner shall submit to the CPM the water supply and distribution system design and Engineer's Report for the Production, Distribution and Use of Recycled Water and copies of any comments from DPH and the Santa Ana RWQCB for review and approval by the CPM. The water supply and distribution system design shall be included in the final design drawings submitted to the CPM.

The Engineer's Report for the Production, Distribution and Use of Recycled Water shall be prepared in accordance with Title 22 and Title 17 of the CA Code of Regulations, the Health and Safety Code, and the Water Code. The project owner shall comply with any reporting and inspection requirements set forth by the DPH and Santa Ana RWQCB to fulfill statutory requirements. The project owner shall submit copies to the CPM of all correspondence between themselves and DPH or the Santa Ana RWQCB within 10 days of receipt or submittal.

SOIL & WATER-2: The project owner shall comply with the requirements of the general National Pollutant Discharge Elimination System (NPDES) permit for discharge of storm water associated with construction activity. The project owner shall develop and implement a construction storm water pollution prevention plan (construction SWPPP) for the construction of the Riverside 3 & 4 site, laydown area, and all linear facilities.

Verification: The project owner shall submit to the CPM a copy of the construction SWPPP prior to site mobilization and retain a copy on site. The project owner shall submit copies to the compliance project manager (CPM) of all correspondence between the project owner and the Santa Ana Regional Water Quality Control Board regarding the NPDES permit for the discharge of storm water associated with construction activity within 10 days of its receipt or submittal. Copies of correspondence shall include the notice of intent sent to the State Water Resources Control Board, and the Board's confirmation letter indicating receipt and acceptance of the notice of intent.

SOIL & WATER-3: The project owner shall comply with the requirements of the general NPDES permit for discharges of storm water associated with industrial activity. The project owner shall develop and implement an industrial storm water pollution prevention plan for the operation of the Riverside 3 & 4.

<u>Verification:</u> The project owner shall submit to the CPM a copy of the industrial SWPPP for operation of the Riverside 3 & 4 prior to commercial operation, and shall retain a copy on site. The project owner shall submit copies to the CPM of all correspondence between the project owner and the SARWQCB regarding the general NPDES permit for discharge of storm water associated with industrial activity within 10 days of its receipt or submittal. Copies of correspondence shall include the Notice of Intent sent by the project owner to the State Water Resources Control Board.

SOIL & WATER-4: The project owner shall treat all process waste water streams with a zero liquid discharge (ZLD) system that results in a concentrated saline (brine) liquid. The concentrated liquid waste shall be appropriately characterized and its waste classification determined. Once classified, the waste will be hauled from the site and disposed of in an appropriately licensed disposal facility. Surface or subsurface disposal of process waste water from the Riverside 3 & 4 is prohibited.

<u>Verification:</u> At least 60 days prior to the start of commercial operation, the project owner shall prepare a ZLD management plan for review and approval by the CPM. The ZLD management plan shall be updated by the project owner and submitted to the CPM for review and approval if a change in water source or infrastructure is needed.

In the annual compliance report, the project owner shall submit a status report on operation of the ZLD system, including dates and length of disruptions, maintenance activities performed, volumes of interim waste water streams stored on site, monthly volumes of residual brine generated, and results of at least one annual sampling and characterization of the brine, comparing the constituent concentrations to the permit limits of the disposal facility. The annual compliance report shall contain an evaluation of whether the ZLD is being operated within the parameters described in the ZLD management plan. The ZLD management plan shall be updated by the project owner if the CPM has determined it is necessary based on the project owner's annual compliance report(s).

REFERENCES

CEC2008m – CEC/F. Miller (tn46184) Data Requests 1-71 (Set 1). Submitted to Dockets 5/6/08

CEC2008n – CEC/F. Miller (tn46199) Issued Identification Report. Submitted to Dockets 5/8/08

RERC2008a – M. Tatterson/M. Jones (tn45678) Application for Certification of an SPPE dated 3/19/08. Submitted to Dockets 3/19/08

RERC2008e – PE/M. Tatterson (tn46637) Data Request Responses 1-71. Submitted to Dockets 6/6/08

TRAFFIC & TRANSPORTATION

Testimony of James Adams

INTRODUCTION

The Traffic and Transportation Analysis of the Riverside Energy Resource Center (RERC Units 3&4) focuses on the project's effect on transportation systems in the vicinity of the project. This analysis examines the project's compatibility with applicable laws, ordinances, regulations, and standards (LORS). It also identifies potential impacts related to the construction and operation of the project on the surrounding transportation systems and roadways, and potential mitigation measures to avoid or lessen those impacts. This analysis also includes an evaluation of the influx of large numbers of construction workers, and how, over the course of the construction phase, the movement of these workers can increase roadway congestion and also affect traffic flow. In addition, staff has also reviewed the project for consistency with the Riverside County Airport Land Use Compatibility Plan, and the effects on navigable airspace and air traffic patterns in the vicinity of the project.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Federal, state, and local regulations that are applicable to the proposed project are listed below. Staff uses LORS as significance criteria for evaluation whether the proposed project would have a significant adverse impact on the environment. The Applicant has indicated its intent to comply with all LORS related to the transport of hazardous materials. This issue is also addressed in the section entitled **HAZARDOUS MATERIALS MANAGEMENT**.

FEDERAL

Title 49, Code of Federal Regulations, Sections 171-177, governs the transportation of hazardous materials, the types of materials defined as hazardous, and the marking of the transportation vehicles.

Title 49, Code of Federal Regulations, Sections 350-399, and Appendices A-G, Federal Motor Carrier Safety Regulations, address safety considerations for the transport of goods, materials, and substances over public highways. Section 353 defines hazardous materials.

Part 77, Federal Aviation Administration (FAA) Regulations, establishes standards for determining obstructions in navigable airspace and sets forth requirements for notification to the FAA of proposed construction. Notification is also required if the structure or obstruction is more than a specified height and falls within any restricted airspace in the approach to airports.

STATE

California Vehicle Code, Division 2, Chapter. 2.5, Div. 6, Chap. 7, Div. 13, Chap. 5, Div. 14.1, Chap. 1 & 2, Div. 14.8, Div. 15.Includes requirements pertaining to licensing, size, weight and load of vehicles operated on highways, safe operation of vehicles, and the transportation of hazardous materials. It includes requirements for the care and protection of State and County highways, and provisions for the issuance of written permits.

LOCAL

The 2007 city of Riverside General Plan identifies roadway definitions, level of service[1] (LOS), standards for traffic, and other transportation modes including transit service, bicycle circulation network, inter-city rail service, and air service (City of Riverside 2007). The city of Riverside's policies and Riverside County's policies related to traffic and circulation needs are identified in the Circulation and Community Mobility Element.

The 2001 Riverside County Regional Transportation Plan is a comprehensive long-range transportation-planning document that serves as a blueprint to guide public policy decisions regarding transportation expenditures and financing (Riverside County 2001).

As part of the Riverside County General Plan, certain regions within the County are subject to area plans which provide more detailed land use and policy direction in the area of local issues such as land use, airport compatibility, circulation, open space, and other topical areas. The Jurupa area surrounding the site is one such region. The following policy from the Jurupa Area Plan is relevant to the Riverside Municipal Airport and nearby land uses which could affect the Airport:

Jurupa Area Plan

JURAP 9.1 To provide for the orderly development of the Riverside Municipal Airport and the surrounding area, comply with the Airport Land Use Compatibility Plan for Riverside Municipal Airport, as well as any applicable policies related to airports in the Land Use, Circulation, Safety and Noise Elements of the Riverside County General Plan.

Riverside County Airport Land Use Compatibility Plan

The Riverside County Airport Land Use Compatibility Plan was adopted by the Riverside County Airport Land Use Commission (RCALUC) in 2004. The purpose of the RCALUCP is to promote compatibility of the Riverside Airport with local land uses. Given the fact that the surrounding area is heavily urbanized, most development can occur only as infill or redevelopment (RCALUC 2004, pg. W6-1).

SETTING

The major highways in the area of the project site are State Route (SR) 91 and SR-60. The local roadways potentially affected by the proposed project are Jurupa Avenue, Acorn Street, and Van Buren Boulevard. Jurupa Avenue and Van Buren Boulevard would provide the primary connection to the project area from SR-91 and SR-60 (see **Traffic and Transportation Figures 1 and 2**). The figures are at the end of this analysis. The project site is located 500 feet east of Acorn Street and 0.25 miles north of

[1] When evaluating a project's potential impact on the local transportation system, staff uses levels of service measurements as the foundation on which to base its analysis. LOS measurements represent the flow of traffic. In general, LOS ranges from "A" with free flowing traffic, to "F" which is heavily congested with flow stopping frequently.

Jurupa Avenue. The critical roads and highways in the area of the project site are described below (RERC 2008a, pp. 6.9-9 & 10).

Pomona Freeway (SR-60) is located approximately six miles north of the project site and is a six-lane highway providing access to the site via Van Buren Boulevard south, east on Jurupa Avenue, and north on Acorn Street to the project site. Van Buren Boulevard provides a partial interchange at SR-60. According to California Department of Transportation (Caltrans) 2006 traffic average annual daily traffic (AADT) counts, SR-60 at the intersection with Van Buren Boulevard handles 158,000 vehicles per day.

Riverside Freeway (SR-91) is the regional east-west travel route in the project vicinity and is a six-lane highway providing access to the site via Van Buren Boulevard north, east on Jurupa Avenue, and north on Acorn Street to the project site. SR-91 is approximately four miles to the south of the RERC site. Both SR-60 and 91 are under the jurisdiction of the Caltrans. At Van Buren Boulevard, SR-91 carries approximately 189,000 vehicles per day in 2006 and is rated level of service (LOS) D.

Van Buren Boulevard is a north-south four-lane roadway with a divided medium and is located approximately one-half mile from the project site. The posted speed limit is 55 mph. Van Buren Boulevard is designated a "major collector[2]" roadway by the city and handled 56,400 vehicles per day in 2003 (City of Riverside 2008). It provides access to both SR-60 and SR-91.

Jurupa Avenue is an east-west four-lane paved road. The posted speed limit is 50 mph and drops to 45 mph at Acorn Street. A traffic signal is located at Van Buren Boulevard and a four-way stop sign at Acorn Street. Jurupa Avenue is designated a "major collector" roadway and handled 14,300 vehicles per day in 2006 (Ibid).

Acorn Street is a north-south two-lane road that begins at the intersection with Central Avenue and terminates north of Jurupa Avenue at the Riverside Regional Water Quality Control Plant. The posted speed limit is 40 mph and traffic at the intersection of Acorn Street and Jurupa Avenue is controlled by a four-way stop sign. It handled 1,900 vehicles per day in 2006 (Ibid).

Airport

The city of Riverside owns the Riverside Municipal Airport, which is located approximately 0.5 miles (3,000 feet) south of the RERC site in Riverside County along Arlington Avenue and Airport Drive. The airport property consists of approximately 441 acres. The airport has runways that are about 5,400 feet long and 2,851 feet long. About 110,000 landings and take-offs occur annually at the airport, which is controlled by tower staff. The City provides administrative support in the form of rental of tie-downs, hangar spaces and the collection of monthly rental/lease fees.

The Flabob Airport is a small privately owned facility located in the northeastern part of the unincorporated community of Jurupa, approximately three and a half miles northeast of the RERC site. The airport is uncontrolled, open 24 hours a day, and primarily used by ultra-light aircraft and those devoted to sport and recreational aviation. The airport is subject to aircraft use and size restrictions due to its location adjacent to a mobile home park. Flight operations occur on an infrequent basis at the airport.

Railroad

The Union Pacific Railroad operates an active main line approximately 0.5-mile east and north of the RERC property. The rail line is used occasionally for freight service and the Metrolink commuter rail service runs along this rail line. RERC has indicated that the rail line will not be used for delivery of materials either for construction or during the operational phase of the project (RERC 2008a, pg. 6.9-31).

Public Transit

Public transit options include the city of Riverside's Transit Authority which includes an on-demand service through their Dial-A-Ride program. In addition, Greyhound Bus Lines has a bus terminal on University Avenue in downtown Riverside. The nearest Amtrak station is in San Bernardino, approximately nine miles north of Riverside.

School Bus Routes

The nearest public schools are Mission Middle School approximately at 0.8-mile, Indian Hills Elementary School at 0.8-mile, Terrance Elementary approximately 1.1 miles west of the Project site, Foothill Elementary approximately two miles southwest of the Project site, and Norte Vista High approximately 1.4 miles west of the Project site. The schools are remote from the project site and are not located along roadways with any project related traffic. School Bus Route 39 uses Lincoln Avenue about one mile north of the RERC site. The bus routes designated by the school district do not run along Jurupa Avenue within the project vicinity; therefore, no school bus routes would be affected by the project.

Bicycle Facilities

Bicyclists are allowed to use all public roadways within the city limits of Riverside. The closest designated bicycle path is associated with the Santa Ana River Trail, located on the north side of the existing wastewater treatment plant and the proposed plant site. Project construction activities would not conflict with bicyclists using the Class 1 Bike trail system.

PROJECT FEATURES

This project would not require transmission connections, natural gas, or water lines. There would be an expansion of the existing RERC switchyard. Aqueous ammonia for the new project would be delivered by truck and would use the existing Units 1&2 off-loading and storage facility.

IMPACTS

TRAFFIC AND TRANSPORTATION Table 1
ENVIRONMENTAL CHECKLIST

THE ENVIRONMENTAL CHECKLIST IDENTIFIES POTENTIAL IMPACTS IN THIS ISSUE AREA. BELOW THE CHECKLIST IS A DISCUSSION OF EACH IMPACT, AND AN EXPLANATION OF THE IMPACT CONCLUSION.	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
TRANSPORTATION/TRAFFIC -- Would the project:				
A. Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?		X		
B. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?		X		
C. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?		X		
D. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?		X		
E. Result in inadequate emergency access?				X
F. Result in inadequate parking capacity?				X
G. Create a significant hazard to the public or the environment through the routine transportation of hazardous material?			X	

Source: California Environmental Quality Act, Guidelines, Appendix G, Amended July 27, 2007.

DISCUSSION OF IMPACTS

A. Increase in Traffic: Less than Significant with Mitigation Incorporated

The project is expected to generate 50 daily round trips (based on 50 workers driving alone to and from the site) during the average construction period for nine months, and 100 daily round trips (based on 75 workers driving alone and 25 workers carpooling) during the peak construction period, which would last two months. (RERC 2008a, pg. 6.9-20).

Staff is requesting that the applicant have the construction contractor update the construction traffic control plan and implementation program used during the construction of RERC Units 1&2. This plan would address timing of heavy equipment, building material deliveries, signing, lighting, and traffic control device placement (see **Condition of Exemption Trans-1**). This should be done in coordination with the City of Riverside Public Works Department and Caltrans as appropriate.

B. Exceed Established Level of Service Standards: Less than Significant with Mitigation Incorporated

The level of service for the morning peak period at the Acorn Street and Jurupa Avenues intersection would remain at LOS B and construction traffic would arrive at the site at 6 AM and would not affect the morning peak period. It appears that given a ten-hour workday, construction traffic could occur during the afternoon peak and the LOS for Acorn Street and Jurupa Avenue would deteriorate from B to C. In addition, construction workers could use the Jurupa Avenue/Van Buren Boulevard intersection during the peak afternoon period, which is currently LOS E and is below the city of Riverside's acceptable standard (i.e., operating at LOS D or better according to the city of Riverside Urban Area General Plan for the area where the proposed RERC project would be located). Therefore, staff is requesting that construction workers avoid that intersection during the afternoon peak period (See proposed **Condition of Exemption Trans-1**).

The addition of RERC project traffic would have no impact on the existing average levels of service (LOS C) from SR 60 along Van Buren Boulevard to Jurupa Avenue, and from Jurupa Avenue to Payton Avenue in the immediate vicinity of the proposed project site.

Staff is also proposing **Condition of Exemption TRANS-3** which would require that any road damaged by project construction would be repaired to original condition. This will ensure that any damage to a local roadway would not become a safety hazard to motorists or pedestrians.

No traffic impacts would result during operation of the RERC since a negligible amount of additional employee trips (i.e., five additional trips) are expected. These additional trips would not result in any significant adverse impact on the local roads.

C. Change in Air Traffic Patterns: Less Than Significant With Mitigation Incorporated

The RERC has no major commercial aviation center in the area. The closest airports are the Riverside Municipal Airport (0.5 miles south of the project site), and the Flabob Airport (3.5 miles northeast from the project site). The Riverside County Airport Land Use Commission (ALUC) staff assessed the RERC Units 1&2 consistency with the adopted *Comprehensive Land Use Plan (CLUP) for the Riverside Airport*, and found it consistent with the airport operations in the area. Staff believes Units 3&4 would also be consistent with the CLUP (see **Land Use** section for further discussion).

Runway 9-27 is the main runway and is oriented in an easterly-westerly direction and is the primary runway due to its length (5,400 feet). Jets that use this runway make a straight-in approach, whereas small aircraft would use the left traffic pattern approach. The traffic pattern approach for Runway 9-27 will not come over the power plant site. Runway 16, which is at a north-south direction, is used primarily when the Santa Ana winds occur in the area.

On April 4, 2008, staff contacted the Riverside Municipal Airport Director to discuss any concerns about installing Units 3 & 4. The Director indicated that, first of all, there had been no problems with the construction or operation of RERC Units 1&2. He believes that Units 3&4 would not have any adverse impact on Riverside Airport operations because the aircraft that fly near the plant site are over 1,000 feet above ground level (AGL). This is a sufficiently high elevation and power plant operation should not disturb air space for pilots within the traffic pattern. In addition, there is a remark in the Riverside Airport section of the Southwest Volume of the Airport/Facility Directory advising pilots to avoid flying over the RERC site (FAA 2008). Staff has been advised by city of Riverside staff that no aircraft fly over the RERC site (City of Riverside 2008).

The cooling tower stacks and cooling tower cells shall have red obstruction lights installed so that they are visible to pilots during night time or periods of darkness. (See proposed **Condition of Exemption Trans-2**). The installation of hooded or shielded lighting is addressed in the Visual Resources section of this report.

Federal Law requires that the FAA be notified of any construction or alteration of navigable airspace within 20,000 feet of any runway more than 3,200 feet in length. Since the Riverside Municipal Airport is located 0.5 miles (3,000 feet) south of the RERC site and has a 5,400-foot long runway, the filing of the FAA Form 7460 is required. Using the FAA 100-to-1 horizontal/vertical distance ratio, any project structure over 30 feet AGL would penetrate navigable airspace for the Riverside Municipal Airport. Several RERC project structures (turbine generator exhaust stacks (97 feet), cooling tower (48 feet), and air intake stacks (59 feet) would be above the 30-foot threshold. The applicant submitted the Form 7460-1 (Notice of Construction or Alteration to Navigable Airspace) to the FAA. The FAA issued Determinations of No Hazard to Air Navigation for all applicable project structures (RERC 2008b).

Radio interference to aircraft caused by EMF generation by the power plant and its related facilities does not present a problem. In general, radio noise includes frequencies on the AM broadcast typically between 525 to 1605 Hertz (Hz). Power plants are designed at 60Hz and constructed to limit Electric and Magnetic Fields (EMF) generation. The 69-kV transmission line would produce 60 Hz EMF outside the plant but these EMF levels would be localized to the transmission lines and would be undetectable by aircraft communication and navigation systems.

Small vapor plumes from the cooling towers may occur occasionally, primarily in the cool morning hours (November-March) or if the plant is operated during cooler weather conditions (November-March). Due to the limited hours of operation per year (2,660 hours), the applicant indicated that the peaker plant would run primarily during the months of May through October when the average temperature is 72° F.

The combustion exhaust temperature ranges from 778 to 830 degrees Fahrenheit. At such high temperatures, little or no visible water vapor plumes would be expected to form above the exhaust stacks under any combination of operating and ambient conditions. Because the RERC turbines would use water injection, there would be a minor potential for very occasional visible water vapor plumes to occur under extremely cold conditions or during turbine startup operating conditions.

The primary cooling load of the cooling towers would be the inlet air chillers. The cooling tower would have a minor secondary load of lube oil cooling. The cooling towers would be very small and their cooling load would be directly dependent on ambient temperature (i.e., the higher the temperature, the higher the cooling load), which would reduce the potential for visible water vapor plumes to form. Because of the simple cycle design of the RERC project and the small size and proposed operation of the cooling towers, staff analyzed plume modeling for the project. Staff concludes that the cooling tower plume potential for the RERC Units 3&4 project would be very low and any plumes that would form would be expected to be small and stay onsite (Aspen 2008). Therefore, RERC plumes would not result in a significant traffic and transportation impact.

D. Increase in Traffic Hazards: Less Than Significant with Mitigation Incorporated

Some delays and traffic congestion (i.e., blockage of through traffic) impacts may occur with heavy construction vehicles driving east on Jurupa Avenue and north or south on Van Buren Boulevard. This issue would be addressed and mitigated in the traffic control plan, by requesting that the applicant schedule heavy vehicle equipment and building deliveries during off-peak hours (See proposed **Condition of Exemption Trans-1**). Therefore, construction traffic would not have an adverse and significant impact on local traffic in the area.

The applicant has indicated its intent to comply with all weight and load limitations on state and local roadways and would seek permits from the City of Riverside and Caltrans as needed.

E. Inadequate Emergency Access: No Impact

A city of Riverside fire station is located on Cypress Avenue between Tyler Street and Robinson Avenue, about 3.5 miles southwest of the RERC site. The nearest hospital (Riverside Community Hospital) is located on Magnolia Avenue, near 14th Street, and is approximately five miles southeast of the project site. With the exception of Jurupa's intersection with Van Buren Boulevard during peak traffic periods, the local roads in the vicinity of the RERC site have minimal traffic congestion levels, with LOS expected to remain at C or above. Staff concludes that the project's construction, including construction workforce commuting activity and truck traffic, would not affect emergency services access to the plant site.

F. Inadequate Parking Capacity: No Impact

The applicant has acknowledged that the proposed laydown area for the project is located adjacent to and north and west of the RERC site on city property. Staff has been advised that the laydown area would be about six acres which would provide enough space for a maximum of 100 construction worker vehicles (City of Riverside 2008c).

G. Transportation of Hazardous Material: Less Than Significant Impact

The construction and operation of the plant would require the transportation of various hazardous materials, including: aqueous ammonia, solvents, lube oils, paint, paint thinners, adhesives, batteries, and construction gases. The transport of hazardous materials over city streets has the potential to result in an increase in traffic hazards. RERC has indicated that the transportation of hazardous materials to and from the site would be conducted in accordance with California Vehicle Code Section 31300. It is anticipated that the route for delivery of hazardous materials would be SR-60 to Van Buren Boulevard, and proceed east on Jurupa Avenue, and north on Acorn Street to the project site. The applicant has proposed to follow the federal and state LORS for handling and transportation of hazardous materials (as discussed further in the **Hazardous Materials Management** section of the Initial Study), therefore no significant impact is expected.

CUMULATIVE IMPACTS

The applicant has identified several projects in various stages of review and development. Staff agrees that the construction of two projects could overlap with the construction RERC Units 3&4. The first, which is proposed by the city of Riverside, involves the widening a section of Van Buren Boulevard that contains the intersection with Jurupa Avenue which could be used by Units 3&4 construction workers. The widening would allow two lanes in each direction throughout the Van Buren Boulevard construction (city of Riverside 2008a). Project construction would take place at the same time as the construction of Units 3&4. Ultimately, Van Buren Boulevard would be a six-lane road.

The second project, which is proposed by the county of Riverside and the Federal Highway Administration, would replace two parallel bridges on Van Buren Boulevard over the Santa Ana River just north of intersection with Jurupa Avenue. The construction of the first bridge would overlap with the construction of RERC Units 3&4. However, there would be no lane closures (county of Riverside 2008).

Given the relatively small amount of construction traffic for Units 3&4 (maximum of 100 workers) compared to more than 54,000 vehicles on Van Buren Boulevard on a daily basis, staff does not anticipate that the mitigation for the two additional projects would adversely affect Units 3&4 construction. Based on the RERC application and input from the city and county of Riverside, staff concludes that there would be no significant cumulative impacts.

CONCLUSIONS

Provided that the applicant updates the RERC Units 1 & 2 construction traffic control and implementation program and follows all LORS acceptable to Caltrans and the city of Riverside for the handling of hazardous materials, the project would result in less than significant impacts to the traffic and transportation system. Staff has considered the minority populations (as identified in **Socioeconomics Figure 1** and low income populations in its impact analysis. There are no significant direct or cumulative traffic and transportation impacts, and therefore, no environmental justice issues.

PROPOSED CONDITIONS OF EXEMPTION

TRANS-1 The project owner shall update and implement a construction traffic control plan for the project in coordination with the city of Riverside and Caltrans. Specifically, the overall traffic control plan shall be designed to:

- schedule heavy vehicle equipment and building materials deliveries to occur during off-peak hours to the extent feasible;
- ensure that construction workers do not use the Jurupa Avenue/Van Buren Boulevard intersection during peak traffic periods; and
- encourage heavy vehicles and vehicles transporting hazardous materials to proceed from SR-60 to Van Buren Boulevard, and then proceed east on Jurupa Avenue, and north on Payton Avenue to the project site.

Verification: At least 45 days prior to the start of ground disturbance the project owner shall provide to the city of Riverside and Caltrans for review and comment and to the CPM for review and approval, a copy of its construction traffic control plan.

TRANS-2 The cooling tower stacks and cooling tower cells shall have red obstruction lights installed so that they are visible to pilots during night time or periods of darkness.

Verification: At least 30 days prior to the start of operation, the project owner shall provide documentation and photographs that demonstrate the obstruction lights have been installed. The project owner shall restore all public roads, easements, and rights-of-way that have been damaged due to project-related construction activities to original or near original condition in a timely manner.

TRANS-3 Prior to the start of site mobilization, the project owner shall consult with the city of Riverside and Caltrans (if applicable) and notify them of the proposed schedule for project construction. The purpose of this notification is to request the local jurisdiction(s) and Caltrans consider postponement of public right-of-way repair or improvement activities in areas affected by project construction until construction is completed and to coordinate any concurrent construction-related activities that are planned or in progress and cannot be postponed with the project owner.

Verification: Prior to the start of site mobilization, the project owner shall photograph or videotape all affected public roads, easements, and right-of-way segment(s) and/or intersections and shall provide the CPM, the affected local jurisdiction(s), and Caltrans (if applicable) with a copy of these images.

Within 60 calendar days after completion of construction, the project owner shall meet with the CPM, the city of Riverside, and Caltrans (if applicable) to identify sections of public right-of-way to be repaired. At that time, the project owner shall establish a schedule to complete the repairs and to receive approval for the action(s). Following completion of any public right-of-way repairs, the project owner shall provide a letter signed by the city of Riverside and Caltrans stating their satisfaction with the repairs to the CPM.

REFERENCES

Aspen 2008. E-mail from Will Walters to James Adams, California Energy Commission, on August 13, 2008.

AIRNAV: Riverside Municipal Airport. Complete aeronautical information about the Riverside Municipal Airport. March 19, 2008. Site address: www.airnav.com/airport/kral.

City of Riverside. Riverside General Plan 2025, Circulation and Community Mobility Element, adopted November 2007.

City of Riverside 2008a. Personal between Mike Katusian, Public Works Department, and James Adams, on May 28, 2008

City of Riverside 2008b. Personal communication between Gilbert Hernandez, city of Riverside, and James Adams on May 30, 2008. The most recent traffic counts for Van Buren Boulevard were taken in September 2003. Traffic counts for Jurupa Avenue and Acorn Street were taken in September 2006.

City of Riverside 2008c. E-mail from Bob Gill to James Adams on August 14, 2008.

County of Riverside 2004. Riverside County Airport Land Use Compatibility Plan. October 14, 2004.

County of Riverside 2008. Personal communication between Taylun Sagian, Riverside County Transportation Department, and James Adams on May 30, 2008.

Federal Aviation Administration (FAA) 2008a. Airport/Facility Directory-Southwest, dated April 10, 2008.

FAA 2008b. Part 77.13, Airspace Obstruction Analysis, Who Must file?

FAA 2008c. Determinations of No Hazard to Air Navigation regarding RERC exhaust stacks 3 & 4, cooling tower, demineralizer water tanks, and air intake stacks. Issued on April 22, 2008.

RERC (Riverside Energy Resource Center) 2008a: Application for Small Power Plant Exemption. March 19, 2008.

RERC (Riverside Energy Resource Center) 2008b: E-mail and attachments from Mike Tatterson, POWER Engineers, to James Adams on April 4, 2008

RERC (Riverside Energy Resource Center) 2008c. Fax from Mike Patterson to James Adams on May 20, 2008.

Riverside County Airport Land Use Compatibility Plan 2005. Riverside Municipal Airport., adopted March 2005

Riverside County Integrated Project. Jurupa Mountains/Pyrite Canyon Specific Plan. Adopted October 2003.

TRANSMISSION LINE SAFETY AND NUISANCE

Testimony of Obed Odoemelam, Ph.D.

INTRODUCTION

The purpose of this analysis is to assess the transmission line construction and operational plan for the proposed Riverside Energy Resource Center's Units 3 and 4 (RERC Units 3 and 4) for incorporation of the measures necessary to mitigate any significant potential adverse health and safety impacts. The proposal is to connect these two new units to the existing RERC Switchyard to which the city's 69-kV sub-transmission system is connected. The connection to the RERC Switchyard would be with underground 69-kilovolt (kV) cables.

Staff's analysis focuses on the following issues, which relate primarily to the physical presence of the proposed lines, or secondarily to the physical interactions of their electric and magnetic fields:

- Aviation safety;
- Interference with radio-frequency communication;
- Audible noise;
- Fire hazards;
- Hazardous shocks;
- Nuisance shocks; and
- Electric and magnetic field (EMF) exposure.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

TRANSMISSION LINE SAFETY AND NUISANCE (TLSN) TABLE 1
Laws, Ordinances, Regulations and Standards (LORS)

Applicable LORS	Description
Aviation Safety	
Federal	
Title 14, Part 77 of the Code of Federal Regulations (CFR),"Objects Affecting the Navigable Air Space"	Describes the criteria used to determine the need for a Federal Aviation Administration (FAA) "Notice of Proposed Construction or Alteration" in cases of potential obstruction hazards.
FAA Advisory Circular No. 70/7460-1G, " Proposed Construction and/or Alteration of Objects that May Affect the Navigation Space"	Addresses the need to file the "Notice of Proposed Construction or Alteration" (Form 7640) with the FAA in cases of potential for an obstruction hazard.
FAA Advisory Circular 70/460-1G, "Obstruction Marking and Lighting"	Describes the FAA standards for marking and lighting objects that may pose a navigation hazard as established using the criteria in Title 14, Part 77 of the CFR.
Interference with Radio Frequency Communication	
Federal	
Title 47, CFR, Section 15.2524, Federal Communications Commission (FCC)	Prohibits operation of devices that can interfere with radio-frequency communication.
State	
California Public Utilities Commission (CPUC) General Order 52 (GO-52)	Governs the construction and operation of power and communications lines to prevent or mitigate interference.
Audible Noise	
Local	
Noise Element of Riverside County's general Plan.	Sets sound level limits for noise-sensitive land uses.
City of Riverside's Municipal Code.	Sets noise limits for various land use categories.
Hazardous and Nuisance Shocks	
State	
CPUC GO-128, "Rules for Underground Electric Line Construction	Governs requirements for the design, and safe operation, and maintenance of underground transmission facilities.
CPUC GO-95, "Rules for Overhead Electric Line Construction"	Governs clearance requirements to prevent hazardous shocks, grounding techniques to minimize nuisance shocks, and maintenance and inspection requirements.
Title 8, California Code of Regulations (CCR) Section 2700 et seq. "High Voltage Safety Orders"	Specifies requirements and minimum standards for safely installing, operating, working around, and maintaining electrical installations and equipment.
National Electrical Safety Code	Specifies grounding procedures to limit nuisance shocks. Also specifies minimum conductor ground clearances.

Applicable LORS	Description
Industry Standards	
Institute of Electrical and Electronics Engineers (IEEE) 1119, “IEEE Guide for Fence Safety Clearances in Electric-Supply Stations”	Specifies the guidelines for grounding-related practices within the right-of-way and substations.
Electric and Magnetic Fields	
State	
GO-131-D, CPUC ”Rules for Planning and Construction of Electric Generation Line and Substation Facilities in California”	Specifies application and noticing requirements for new line construction including EMF reduction.
CPUC Decision 93-11-013	Specifies CPUC requirements for reducing power frequency electric and magnetic fields.
Industry Standards	
American National Standards Institute (ANSI/IEEE) 644-1944 Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines	Specifies standard procedures for measuring electric and magnetic fields from an operating electric line.
Fire Hazards	
State	
14 CCR Sections 1250-1258, “Fire Prevention Standards for Electric Utilities”	Provides specific exemptions from electric pole and tower firebreak and conductor clearance standards and specifies when and where standards apply.

SETTING

According to information from the applicant, Riverside Public Utilities (RPU 2008a, pp. 1-1, 1-2, and1-5), the proposed RERC Units 3 and 4 will be constructed on 2.2 acres of the existing 16-acre RERC site and immediately north of the existing Units 1& 2. The generated power would be transmitted to the city’s 69-kV power grid via the existing RERC Switchyard using two 69-kV underground connecting cables extending from each unit’s step-up transformer to its connection point in the RERC Switching Station. These new connecting underground lines would be located entirely within the ECGS property boundaries without nearby residences, meaning that there would not be the type of residential field exposures at the root of the health concern of recent years.

As more fully discussed by the applicant (RPU 2008a, pp.2-1,4-1and 4.2), the proposed project and related underground connecting cables would be owned, and operated by RPU, which would design, build, and maintain the lines according to RPU’s design guidelines and construction practices reflecting compliance with applicable safety laws, ordinances, regulations, and standards (LORS), as well as California Public Utilities Commission’s (CPUC’s) general orders on the design and safe operation of underground lines. RPU and the other California municipal utilities voluntarily comply with these CPUC general orders although they were specifically established by CPUC for utilities under CPUC regulation. Such voluntary compliance reflects the effort of the state's municipal utilities to facilitate a uniform handling of the power line safety issue.

IMPACTS

The following is the Environmental Checklist that identifies potential impacts regarding transmission line safety and nuisance. Below the checklist is a discussion of each type of impact, and the reasons for staff's conclusions regarding the potential for significance.

DISCUSSION OF IMPACTS

A. Aviation Hazard: No Impact

As described by the applicant, (RPU 2008a, p.4-2), the interconnection between the proposed Units 3 and 4 and the existing RERC Switchyard would be via 69-kV underground cables. Since these lines would not protrude into the navigable air space, their operation would not pose a collision-related navigation hazard to area aircraft.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
TRANSMISSION LINE SAFETY AND NUISANCE -- Would project operation:				
A. Pose an aviation hazard to area aircraft?				**X**
B. Lead to interference with radio-frequency communication?				**X**
C. Pose a hazardous or nuisance shock hazard?		**X**		
D. Pose a fire hazard?			**X**	
E. Expose humans to higher electric and magnetic field levels than justified by existing knowledge?		**X**		

B. Radio Frequency Interference: No Impact

Since electric fields are unable to penetrate the soil and most materials, and the proposed underground lines would be unable to produce the above-ground electric fields that can produce the radio-frequency interference responsible for perceivable line effects, operation would not lead to complaints about radio-frequency interference. Therefore, staff recommends no related conditions of exemption.

C. Hazardous and Nuisance Shocks: Less Than Significant with Mitigation Incorporated

Since the proposed underground lines would be constructed according to RPU's design guidelines reflecting compliance with applicable safety regulations and standards, staff regards the lines as unlikely to produce hazardous shocks when operated. Staff recommends Condition of Exemption **TLSN-1** to ensure implementation of the necessary compliance measures.

D. Fire Hazard: Less Than Significant Impact

The issue of concern to staff is the likelihood of fire from direct line contact with combustible materials or fire generation by sparks from the line. Since the proposed lines would be underground lines with no available combustible materials, staff does not regard the line as posing a fire hazard and recommends no related condition of exemption.

E. Electric and Magnetic Field Exposure: Less Than Significant with Mitigation Incorporated

Some researchers have concluded that exposure to power-frequency electric and magnetic fields can result in biological impacts at high intensities. However, power line fields have not been established (at normal environmental levels) as capable of significant biological effects in exposed humans. The CPUC has established the requirement for design guidelines for managing such fields in light of present knowledge. As previously noted, RPU and the other California municipal utilities voluntarily comply with these requirements. The question of concern to staff is whether the proposed lines' undergrounding would lead to field exposures within the limits reflected in CPUC's requirements on the issue.

As noted by the applicant (RPU 2008a, p. 4-2) the proposed 69-kV underground lines would run through underground concrete conduits according to RPU designs reflecting compliance with applicable safety LORS. Since underground lines are placed more closely together in their encasements than their overhead counterparts, they (through field cancellation effects), produce magnetic fields of much lower intensities those of their overhead counterparts of the same voltage and current-carrying capacity. It is for this reason that undergrounding is regarded as producing the magnetic fields of the lowest intensity possible without impacting line safety, efficiency, reliability and maintainability. The applicant's intended design according to RUR's design and operational practices constitutes mitigation and compliance with CPUC's requirements on the field and non-field impacts of concern in this analysis. Staff therefore, does not consider it necessary to recommend field strength measurements as a way of assessing the need for further mitigation during operations.

CONCLUSIONS

Staff has determined that the proposed underground transmission lines for RERC Units 3 and 4 lines would be designed and operated in compliance with all applicable LORS thus, ensuring that the project would have less-than-significant or no impacts regarding transmission line safety and nuisance. The following Condition of Exemption is recommended to ensure implementation of the design and operational measures necessary to ensure such compliance.

PROPOSED CONDITIONS OF EXEMPTION

TLSN-1 The project owner shall construct the proposed underground lines according to the requirements of CPUC's GO-128, GO-52, sections of Title 8, Section

2700 et seq. of the California Code of Regulations and RPU's EMF-reduction guidelines as applicable to the design, construction and operation of underground lines and related facilities.

Verification: Thirty days before starting construction of the transmission line or related structures and facilities, the project owner shall submit to the Energy Commission's Compliance Project Manager (CPM) a letter signed by a California registered electrical engineer affirming the intention to comply with this requirement.

REFERENCES

Electric Power Research Institute (EPRI) 1982. Transmission Line Reference Book: 345 kV and Above.

Energy Commission Staff 1992. High Voltage Transmission Lines: Summary of Health Effects Studies. California Energy Commission Publication, P700-92-002.

RPU (Riverside Public Utilities), 2008a. Application for Small Power Plant Exemption for the Riverside Energy Resource Center. Submitted to the California Energy Commission on March 19, 2008.

National Institute of Environmental Health Services 1998. An Assessment of the Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields. A Working Group Report, August, 1998.

TRANSMISSION SYSTEM ENGINEERING

Testimony of Ajoy Guha, P. E. and Mark Hesters

INTRODUCTION

The City of Riverside Public Utilities (RPU, applicant) filed an application for a Small Power Plant Exemption (SPPE) with the California Energy Commission (Energy Commission) to construct and operate a nominal 95-megawatt (MW), natural gas-fired, simple cycle combustion turbine generating facility to be located in the City of Riverside of the Riverside County, California. The applicant proposes to connect their project, Riverside Energy Resource Center (RERC) units 3 and 4 (3 & 4), to RERC 69 kV switchyard where the existing RERC 95 MW units 1 and 2 are interconnected. The expected commercial operation date (COD) of the project is summer of 2009 (RERC 2008a, AFC).

The Transmission System Engineering (TSE) analysis examines whether or not the facilities associated with the proposed interconnection conform to all applicable laws, ordinances, regulations and standards (LORS) required for safe and reliable electric power transmission. Staff's analysis evaluates the power plant switchyard, outlet line, termination and downstream facilities identified by the applicant. Additionally, under the California Environmental Quality Act (CEQA), the Energy Commission must conduct an environmental review of the "whole of the action," which may include facilities not licensed by the Energy Commission (California Code of Regulations, title 14, §15378). Therefore, the Energy Commission must identify the system impacts and necessary new or modified transmission facilities downstream of the proposed interconnection that are required for interconnection and represent the "whole of the action."

The RPU is responsible for ensuring electric system reliability in the City of Riverside system for addition of the proposed RERC 3 & 4. The Energy Commission staff relies on the interconnecting authority or transmission owner, in this case RPU, for the analysis of impacts on the transmission grid as well as the identification and approval of required new or modified facilities downstream from the proposed interconnection required as mitigation measures. Since the RPU 69 kV system is not a part of the California Independent System Operator (California ISO) grid and its normal operation is not controlled by the California ISO, the California ISO is not directly responsible for ensuring electric system reliability for the proposed generator interconnection and does not provide any approval for interconnection of the project. The California ISO, therefore, would not provide in this case any analysis or testimony in the Energy Commission's process. The staff, therefore, has increased responsibility to evaluate the system reliability impacts of the project, and provide conclusions and recommendations to the Commission. However, Southern California Edison (SCE) will also perform a System Impact study (SIS) for the analysis of impacts on their 230 kV system and Vista substation and necessary mitigation for interconnection of the project on the RPU 69 kV system (RERC 2008e and 2008q).

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

- California Public Utilities Commission (CPUC) General Order 95 (GO-95), "Rules for Overhead Electric Line Construction," formulates uniform requirements for construction of overhead lines. Compliance with this order ensures adequate service and safety to persons engaged in the construction, maintenance and operation or use of overhead electric lines and to the public in general.
- California Public Utilities Commission (CPUC) General Order 128 (GO-128), "Rules for Construction of Underground Electric Supply and Communications Systems," formulates uniform requirements and minimum standards to be used for underground supply systems to ensure adequate service and safety to persons engaged in the construction, maintenance and operation or use of underground electric lines and to the public in general.
- The National Electric Safety Code, 1999 provides electrical, mechanical, civil and structural requirements for overhead electric line construction and operation.
- RPU Planning Criteria and Operation Standards/Procedures: Instead of following NERC or NERC/WECC Planning Standards the RPU currently follows their Transmission Reliability Criteria and Operation Standards/Procedures approved by the City of Riverside management for the RPU 69 kV subtransmission system. However, the RPU informed staff that the RPU is preparing to adhere to all relevant NERC/WECC Planning Standards, regional, subregional and power pool facility connection requirements in future (RERC 2008h, RERC 2008m and RERC 2008r).
- NERC/WECC Planning Standards: The Western Electricity Coordinating Council (WECC) Planning Standards are merged with the North American Electric Reliability Council (NERC) Reliability Standards and provide the system performance standards used in assessing the reliability of the interconnected system. These standards require the continuity of service to loads as the first priority and preservation of interconnected operation as a secondary priority. Certain aspects of the NERC/WECC Planning Standards are either more stringent or more specific than the NERC Reliability Standards alone. These standards provide planning for electric systems so as to withstand the more probable forced and maintenance outage system contingencies at projected customer demand and anticipated electricity transfer levels, while continuing to operate reliably within equipment and electric system thermal, voltage and stability limits. These standards include the reliability criteria for system adequacy and security, system modeling data requirements, system protection and control, and system restoration. Analysis of the WECC system is based to a large degree on Section I.A of the standards, "NERC and WECC Planning Standards with Table I and WECC Disturbance-Performance Table" and on Section I.D, "NERC and WECC Standards for Voltage support and Reactive Power". These standards require that the results of power flow and stability simulations verify defined performance levels. Performance levels are defined by specifying the allowable variations in thermal loading, voltage and frequency, and loss of load that may occur on systems during various disturbances. Performance levels range from no significant adverse effects inside and outside a system area during a minor disturbance (loss of load or a single transmission element out of service) to a level that seeks to prevent system cascading and the subsequent blackout of islanded areas during a major disturbance (such as loss of multiple 500

kV lines along a common right of way, and/or multiple generators). While controlled loss of generation or load or system separation is permitted in certain circumstances, their uncontrolled loss is not permitted (WECC 2002).

- North American Reliability Council (NERC) Reliability Standards for the Bulk Electric Systems of North America provide national policies, standards, principles and guidelines to assure the adequacy and security of the electric transmission system. The NERC Reliability Standards provide for system performance levels under normal and contingency conditions. With regard to power flow and stability simulations, while these Reliability Standards are similar to NERC/WECC Planning Standards, certain aspects of the NERC/WECC Planning Standards are either more stringent or more specific than the NERC Reliability Standards for Transmission System Contingency Performance. The NERC Reliability Standards apply not only to interconnected system operation but also to individual service areas (NERC 2006).
- California ISO Planning Standards also provide standards, and guidelines to assure the adequacy, security and reliability in the planning of the California ISO transmission grid facilities. The California ISO Grid Planning Standards incorporate the NERC/WECC Planning Standards and NERC Reliability Standards. With regard to power flow and stability simulations, these Planning Standards are similar to the NERC/WECC Planning Standards or NERC Reliability Standards for Transmission System Contingency Performance. However, the California ISO Standards also provide some additional requirements that are not found in the WECC/NERC or NERC Standards. The California ISO Planning Standards apply to all participating transmission owners interconnecting to the California ISO controlled grid. They also apply when there are any impacts to the California ISO grid due to facilities interconnecting to adjacent controlled grids not operated by the California ISO (California ISO 2002a).

EXISTING FACILITIES AND RELATED SYSTEMS

The proposed project's 2.2-acre site is immediately north of existing RERC units 1 and 2 (generating capacity 95 MW), within the 15 acre RERC site owned by the City of Riverside. The project will be interconnected to the 69 kV bus of the RERC switchyard which is connected to the RPU 69 kV transmission system through two 69 kV lines, one going to the Riverside substation and the other going to the Mountain View substation. The RPU 69 kV network is connected to the SCE 230 kV grid through two 280 MVA transformer banks at the Vista 230/69 kV substation with a total import capacity of 557 MW. The Vista 230 kV substation is strategically located in the SCE bulk power system on the west of Devers and is connected to the Devers, Mira Loma, San Bernardino and Etiwanda substations through 230 kV lines. The Vista substation 69 kV bus C is connected to RPU 69 kV network through seven 69 kV lines (RERC 2008f).

The RPU system had an average 5.75% annual historical load growth in the last five years. In the summer of 2007, the RPU system had a peak load of 609 MW and the projected peak loads for 2009 and 2010 summer are 682 MW and 721 MW respectively. The PPU system has at present a total power resource of 685 MW (Import: 557 MW, RERC units 1 and 2: 96 MW, Springs unit: 32 MW). As such in the near future the RPU system would face a shortage of power resources to meet their load demands during summer peak hours especially for loss of the imports or forced outage of the existing RERC generating units 1 and 2 and would be left with no reserved power. The new RERC 3 & 4 are, therefore, essential additions in 2009 to the RPU resources in order to maintain reliability in their system with fast increasing load demand. The new generation would also provide additional reactive power supply and voltage support during peak hours and may reduce losses in the RPU system.

RPU has a 2012 plan for the Riverside Transmission Project (RTRP) which is comprised of a second point of 230/69 kV interconnection with the SCE system and several upgrades of their 69 kV network. The project would result in sectionalizing and operating the RPU 69 kV network into two subsystems, one subsystem would be served from the existing SCE Vista 230/69 kV substation and RERC generation, and the other subsystem would be served from the new SCE Wilderness 230 /69 kV substation. The new Wilderness substation would involve building a double circuit 230 kV transmission line from the SCE bulk system (RERC 2008a and RERC 2008p).

PROJECT DESCRIPTION

The applicant proposes to construct and operate the RERC 3 & 4 as a nominal 95-megawatt (MW), natural gas-fired, simple cycle power plant to be located on 2.2-acres of the 15-acre RERC site and immediately north of existing RERC units 1 and 2. The RERC 3 & 4 would consist of two LM6000 General Electric (GE) combustion turbine generating (CTG) units with a gross maximum output of approximately 50 MW for each unit and with a total net output of approximately 95 MW. Each 71.17 MVA, 13.8 kV generating unit would be connected to a 3,000-ampere13.8 kV switchgear through about seven three and a half-core 1,000 kcmil copper Ethylene Propylene Rubber (EPR) 15 kV cables in underground ducts and a 3000-ampere circuit breaker. Each 15 kV cable has a thermal rating of 325-431 amperes. The low voltage terminals of each dedicated 42/56/70 MVA, 13.8/69 kV generator step-up (GSU) transformer would be connected to the 13.8 kV switchgear through a 3000-ampere circuit breaker (RERC 2008a, AFC).

RERC SWITCHYARD EXTENSION AND INTERCONNECTION FACILITIES

The high voltage terminals of each GSU transformer would be connected with the existing RERC 69 kV switchyard by three single-core 1750 kcmil aluminum cross linked polyethylene (XLPE) 69 kV underground cables, each cable with a 604-ampere continuous rating and 40 kA short circuit rating. Each new 69 kV underground cable circuit would be about 520 feet in length. The existing RERC 69 kV switchyard has currently a 3,300-ampere double bus system with four switch bays, each bay with a 2,000-ampere one and a half breaker configuration. Two of the existing switch bays are used for interconnecting the existing RERC peaking units 1 and 2 and two others are used for the existing 69 kV transmission lines to the Riverside and Mountain View substations.

To facilitate interconnection of the proposed RERC 3 & 4 to the switchyard, the 69 kV north and south buses would be extended to accommodate additional four switch bays, each bay with a one and a half breaker arrangement, and would involve installation of new six 69 kV breakers and disconnect switches, each with a 2,000-ampere continuous rating and 44 KA short circuit rating. Two of the new switch bays would be used for termination of 69 kV underground cables coming from the high side of GSU transformers of new generating units and other two new switch bays would remain spare. The RERC switchyard extension and the interconnection facilities would be constructed, owned and operated by the RPU (RERC 2008j, RERC 2008k and RERC 2008p).

The configuration of the RERC switchyard extension and the interconnection facilities including the new 69 kV underground cables and GSU step-up transformers are in accordance with industry and good utility practices, and are acceptable to staff.

TRANSMISSION SYSTEM IMPACT ANALYSIS

For the interconnection of a proposed generating unit or transmission facility to the grid, the interconnecting utility and the control area operator are responsible for insuring grid reliability. In accordance with FERC/CA ISO/Utility Tariffs, System Impact and Facilities Studies are conducted to determine the preferred and alternate interconnection methods to the grid, the downstream transmission system impacts and the mitigation measures needed to insure system conformance with performance levels required by utility reliability criteria, NERC planning Standards, WECC reliability criteria, and CA ISO reliability criteria (CA ISO 2002a & 2003a). Staff relies on the studies and any review conducted by the responsible agencies to determine the effect of the project on the transmission grid and to identify any necessary downstream facilities or indirect project impacts required to bring the transmission network into compliance with applicable reliability standards. According to current FERC/RPU Tariff, RPU is a participating transmission owner and under operation control of the California ISO for the existing SCE 230/69 kV interconnection at Vista 230/69kV substation. But RPU is responsible for planning, reliability and operation of their 69 kV network. For the proposed interconnection of the RERC 3 & 4 to their 69 KV network, RPU is, therefore, responsible for insuring grid reliability and performing System Impact Studies (SIS). NERC/WECC planning Standards are generally applicable for systems 100 kV and above. For the RPU 69 kV system planning and operation, the RPU follows its own utility planning reliability criteria and operation standards or procedures.

The System Impact and Facilities Studies analyze the grid with and without the proposed project under conditions specified in the planning standards and reliability criteria. The standards and criteria define the assumptions used in the study and establish the thresholds through which grid reliability is determined. The studies must analyze the impact of the project for the proposed first year of operation and thus are based on a forecast of loads, generation and transmission. Forecasts are developed by the interconnected utility, which would be RPU in this case. The studies are focused normally on thermal overloads, voltage deviations, system stability (excessive oscillations in generators and transmission system, voltage collapse, loss of loads or cascading outages), and short circuit duties.

If the studies show that the interconnection of the project causes the grid to be out of compliance with reliability standards then the study will identify mitigation alternatives or ways in which the grid could be brought into compliance with reliability standards. If the interconnecting utility determines that the only feasible mitigation includes transmission modifications or additions which require CEQA review as part of the "whole of the action," the Energy Commission must analyze these modifications or additions according to CEQA requirements.

RPU System Impact Study

The May 30, 2008, SIS was performed by Power Engineers on behalf of the RPU for the RPU 69 kV system. The study included a power flow analysis for normal (N-0) with all facilities in service and single contingency (N-1) system conditions and a short circuit duty analysis. The RPU was informed that due to historical low frequency of double contingencies (N-2) in the RPU system, the power flow analysis for double contingency system conditions was not performed. The power flow study was conducted for the RPU 69 kV system with the available power resources, and projected 2009 peak and off-peak load demands, and with and without the addition of the proposed RERC 3 & 4. The projected peak demand in 2009 was considered as 682 MW and the off-peak demand was assumed as 50% of the peak demand. The total available RPU power resources in the 2009 base cases was considered as 685 MW, which includes 557 MW power import through the SCE 230/69 kV Vista substation tie, 96 MW from the existing RERC generating units 1 and 2, and 32 MW from the existing Springs generating unit.

The ASPEN program was used for modeling the RPU 69 kV network and the existing 230/69 kV SCE Vista substation in the 2009 RPU base cases, and for performing the power flow and short circuit analyses. In accordance with the RPU planning criteria, the power flow study report considered normal and emergency ratings of an overhead line conductor same for likely (N-1) outage conditions. However, for identification of overload reliability criteria violations and mitigation an emergency conductor rating based on 110% of normal rating is considered (RERC 2008f).

The short circuit study was performed with and without the addition of the new RERC 3 & 4 under the following scenarios:

a) RPU 2009 normal system, the fault current was monitored in fourteen 69 kV substations.

b) A 2012 sensitivity case for the RPU system with the proposed 2012 plan for the Wilderness 230/69 kV new SCE substation, existing RERC units 1 and 2, future two potential 25 MW combined cycle RERC units and all 69 kV planned upgrades in service.

Power Flow Study Results and Mitigation

Based on the results of the SIS, there are no normal (N-0) overloads identified in the RPU 69 kV system due to the interconnection of the RERC 3 & 4 as proposed during 2009 summer peak and summer off-peak system conditions with all facilities in service. No overloads were identified under single contingencies (N-1) during 2009 summer off-peak system conditions.

The SIS results show that the RERC project would result in the overload of one line under n-1 contingency conditions, would reduce loading on some lines and would exacerbate pre-project overloads on other lines. The power flow study results have been tabulated in the study report in revised Table 1(RERC 2008f, RERC 2008p and RERC 2008d).

Under 2009 summer peak system conditions and certain contingencies, the study identified the following overloads with addition of the new RERC units and corresponding mitigation measures:

1. Plaza-Riverside 69 kV line: This line overloads under one n-1 outage without the RERC 3 & 4 and RERC 3 & 4 cause the line to overload under two new n-1 outages.
   a. Without the RERC 3 & 4 the Plaza-Riverside line is loaded at 100% of its rating when the Mountain View – Vista 69 kV line is out of service, the addition of the RERC causes this loading to increase to 128%.
   b. Without the RERC 3 & 4 the Plaza-Riverside line is loaded at 92% of its rating when the Freeman-Vista 69 kV line is out of service, the addition of the RERC causes this loading to increase to 118%.
   c. The pre-project Plaza – Riverside overload remains unchanged at 135% for outage of the Mountain View-RERC 69 kV line with the addition of the RERC 3 & 4.

   Mitigation: In order to reduce the loading of the line to its emergency conductor rating (110% of normal rating) for the overloads as stated above in items 1.a and 1.b, the mitigation includes curtailment of RERC generation output as approved by the RPU. In order to eliminate the overload condition as stated above in item 1.c, RPU would carry out their operation procedure no.120 which would sectionalizing the 69 kV network or shift loads to other circuits and as a last resort to load shedding. According to the RPU planning criteria and operation procedures, staff considers the mitigation measures acceptable.

2. Hunter-University 69 kV line: The addition of the RERC 3 & 4 reduces pre-project overload of the Hunter – University 69 kV line from 144% during outage of the La Colina-Vista 69 kV line to 142%.

   Mitigation: Mitigation for reducing the loading of the line to its emergency conductor rating would be the RPU sub-transmission project (STP) approved by the City of Riverside as part of their transmission expansion plan. The project includes building a new double circuit 69 kV line between the La Colina and Riverside substations and several rearrangements in the RPU 69 kV network. Staff considers the mitigation acceptable.

3. Freeman-Kaiser 69 kV line: The addition of the RERC 3 & 4 reduces the pre-project overload of the Freeman-Kaiser 679 kV line from 116% for outage of the Harvey Lynn-Mountain View 69 kV line to 113%.

   Mitigation: RPU would carry out their operation procedure no. 120 which initially prefers sectionalizing the 69 kV network or shifting loads to other circuits and as a last option resorts to partial load shedding. According to the RPU planning criteria and operation procedures, staff considers the mitigation measures acceptable.

4. Mountain View-Freeman 69 kV line: The addition of the RERC 3 & 4 increases the pre-project overload of the Mountain View – Freeman 69 kV line from 115% for outage of the Harvey Lynn-Mountain View 69 kV line to 116%.

   Mitigation: RPU would observe their operation procedure no. 120 which initially prefers sectionalizing the 69 kV network or shifting loads to other circuits and as a last option resorts to partial load shedding. According to the RPU planning criteria and operation procedures, staff considers the mitigation measures acceptable.

5. La Colina-Vista 69 kV line: The addition of the RERC 3 & 4 decreases the pre-project overload of the La Colina- Vista 69 kV line from 138% for outage of the of the Hunter-University 69 kV line to 134%.

   Mitigation: Mitigation for reducing the loading of the line to its emergency conductor rating would be the RPU sub-transmission project (STP) approved by the City of Riverside as part of their transmission expansion plan. The project includes building a new double circuit 69 kV line between the La Colina and Riverside substations and several rearrangements in the RPU 69 kV network. Staff considers the mitigation acceptable.

6. Mountain View-Harvey Lynn 69 kV line: The addition of the RERC 3 & 4 decreases the pre-project overload of the Mountain View-Harvey Lynn 69 kV line from 115% for outage of the of the Freeman-Kaiser 69 kV line to 112%.

   Mitigation: As mitigation RPU would observe their operation procedure no. 120 which initially prefers sectionalizing the 69 kV network or shifting loads to other circuits and as a last option resorts to partial load shedding. According to the RPU planning criteria and operation procedures staff considers the mitigation measures acceptable.

Note: The RPU also informed staff that some of the contingency line overloads as stated above would be more adequately eliminated in the future with implementation of the RTRP in 2012.

Short Circuit Study Results and Mitigation

The Short Circuit Study was performed to analyze whether any substation equipment or breakers would be overstressed due to increase in the fault currents for the addition of the RERC 3 & 4. The study identified increase in three-phase to ground fault currents in the RPU system as stated in the Tables 3 & 4 of the study report. The results indicate that due to increase in fault currents for the addition of RERC new units, six circuit breakers at the Freeman, Hunter and Riverside substations would be overstressed beyond their fault interrupting duties as shown in Table 2 of the study report.
Mitigation: RPU would replace six breakers with higher fault duties at the Freeman, Hunter and Riverside substations as listed in the Table 2. Staff concurs with the mitigation plan.

SCE System Impact Study

The SCE bulk system is interconnected to the RPU 69 kV system through the Vista 230/69 kV substation, and RPU is a participating transmission owner and under operation control of the California ISO for the interconnection. SCE, therefore, needs to perform a System Impact Study separate from the May 30, 2008 SIS provided to the

RPU to analyze the system impacts on the SCE bulk system and Vista substation for interconnection of the proposed RERC 3 & 4 to the RPU 69 kV system. The study would be performed to ensure compliance with the NERC/ WECC and California ISO planning standards. The study would include a load flow analysis, a short circuit duty analysis and a transient stability analysis. The study would determine whether any reliability criteria violations with regard to thermal overloading, short circuit faulty duty and transient stability would occur in the SCE system for the addition of the RERC 3 & 4. The study would consider a mitigation plan which may include upgrades for facilities, if necessary, to eliminate any reliability criteria violations. The RPU has agreed to submit the SCE study plan and agreement after its execution with SCE. Because the SCE system is a transmission system required to meet the WECC, NERC and California ISO planning and reliability standards, staff considers that the RPU would comply in due course with any mitigation requirements according to the SCE SIS results (RERC 2008q).

DOWNSTREAM FACILITIES

Besides the RERC switchyard and the interconnection facilities including the new 69 kV underground cable line, to accommodate interconnection of the RERC 3 & 4 the mitigation plan requires replacement of six circuit breakers at the Freeman, Hunter and Riverside substations. The mitigation plan also includes the 2010 RPU sub-transmission project (STP) for building a new double circuit 69 kV line between the La Colina and Riverside substations. The construction would be done by the RPU.

CUMULATIVE IMPACTS

Depending on fast increasing load demands in the RPU system, the amounts of local generation and imports through Vista substation, staff believes that the addition of RERC 3 & 4 would have some cumulative impacts on the RPU 69 kV transmission system until system upgrades are implemented. The RPU SIS included the RERC Units 1 and 2 and thus analyzed the potential cumulative impacts of the two RERC projects. The cumulative marginal impacts due to the addition of the RERC 3 & 4, as identified in the RPU SIS, will be mitigated. Staff also believes that there are some positive impacts as voltages are improved and system losses in the local network may decrease.

ALTERNATIVE TRANSMISSION ROUTES

The applicant did not consider any interconnection alternative other than the proposed interconnection facilities to the existing RERC 92 kV switchyard, since the project site is adjacent to the existing RERC units 1 and 2 and involved the shortest possible interconnection with lower environmental impacts and more operational benefits (IID 2006a, Section 1.4). This is allowed under CEQA and acceptable to staff.

COMPLIANCE WITH LORS AND CEQA REVIEW

The RPU SIS performed for the RPU 69 kV system demonstrates that there would be some adverse impacts with regard to overload and short circuit duty reliability criteria violations in the RPU 69 kV subtransmission system for the addition of the RERC 3 & 4. However, according to the RPU mitigation plan the identified reliability criteria violations would be effectively mitigated by the STP network upgrades (as needed with or without the RERC 3 & 4), dropping the RERC generation output, operation standards/procedures and replacement of six circuit breakers. SCE would also perform a SIS to analyze the system impacts in their 230 kV system and Vista 230/69 kV substation. The study results would consider a mitigation plan, if necessary, to eliminate any reliability criteria violations. Staff has concluded the RERC 3 & 4 would be reliably connected to the RPU system without any significant adverse impacts on the transmission facilities of the RPU and interconnecting neighboring SCE system. The interconnection, therefore, would comply with the RPU reliability criteria and NERC/WECC/SCE planning standards.

The RERC switchyard extension and the interconnecting facilities including the new 69 kV underground cables and GSU transformers would be built by the RPU according to NESC standards and GO-128 Rules within the fence line of the RERC project site and would have no significant or unmitigated environmental impacts requiring CEQA review. The facilities would be in accordance with industry and good utility practices, would conform to engineering LORS and are acceptable to staff.

The STP project includes building a new double circuit 69 kV line between the La Colina and Riverside substations and several rearrangements in the RPU 69 kV network. Since the new line is approved by the City of Riverside as part of their transmission expansion plan and is not a direct network upgrade requirement related to the addition of RERC 3 & 4, the new line is considered beyond the scope of the Energy Commission's CEQA review.

The addition of the RERC 3 & 4 would, therefore, conform to the requirements and standards of all applicable LORS.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

No agency or public comments related to the TSE discipline have been received.

CONCLUSIONS

1. The SIS performed for the RPU 69 kV system demonstrates that there would be some adverse impacts with regard to overload and short circuit duty reliability criteria violations in the RPU 69 kV subtransmission system for the addition of the RERC 3 & 4. However, according to the RPU mitigation plan the identified reliability criteria violations would be effectively mitigated. SCE would also perform a SIS to analyze the system impacts in their 230 kV system and at the Vista 230/69 kV substation. The SCE study results would consider a mitigation plan, if necessary, to eliminate any reliability criteria violations. Staff has concluded that the RERC 3 & 4 would be reliably connected to the RPU system without any significant adverse impacts on the transmission facilities of the RPU and interconnecting neighboring SCE system. The

interconnection, therefore, would comply with the RPU reliability criteria and NERC/WECC/SCE planning standards.

2. The RERC switchyard extension and the interconnecting facilities including the new 69 kV underground cables and GSU step-up transformers are adequate in accordance with industry and good utility practices and are acceptable to staff according to engineering LORS.

3. The new interconnection facilities would be built within the fence line of the RERC project site and would have no significant or unmitigated environmental impacts requiring CEQA review by the Energy Commission. The STP project for building a new double circuit 69 kV line is approved by the City of Riverside as part of the RPU transmission expansion plan and is not a direct network upgrade requirement related to the addition of RERC 3 & 4. The new line is, therefore, considered beyond the scope of the CEQA review.

4. The new RERC 3 & 4 with a net output capacity of 95 MW are essential additions to the RPU system in order to maintain adequate reliability in the RPU system with fast increasing load demands. Staff believes that the new generation would also provide additional reactive power and voltage support during peak hours, and may reduce losses in the RPU system.

5. Since staff has determined that the proposed RERC 3 & 4 would be interconnected and operated in conformity with the applicable LORS, staff is not recommending any Conditions of Exemption.

CONDITIONS OF EXEMPTION

None

REFERENCES

CA ISO (California Independent System Operator) 2002a. CA ISO Planning Standards, February 7, 2002.

CA ISO (California Independent System Operator) 2003a. CA ISO, FERC Electric Tariff, First Replacement Vol. No. 1, March 11, 2003

CEC 2008m. Data Requests 1-71 (Set 1), submitted to Dockets 5-6-08

RERC 2008a. Application for Certification for SPPE dated 3-19-08. Submitted to Dockets 3-19-08.

RERC 2008d. RERC Electrical Impact Study. Submitted 5-30-08

RERC 2008e. Data requests Responses 1-71. Submitted 6-6-08.

RERC 2008.f. Transmission System Impact Study dated May 30, 2008; Appendix A. Submitted 6-24-08.

RERC 2008fg. Updated Responses additional information. Data response and Issue resolution workshop. Submitted 6-26-08.

RERC 2008m. Letter from the City of Riverside, Review of RPU planning criteria.. Submitted 8-7-08.

RERC 2008h. Letter about planning criteria. Submitted 7-22-08.

RERC 2008j. One-line diagram for 69 kV. Submitted 7-22-08.

RERC 2008k. Drawing no. ECSOE4101-05 RA for 69 kV switchyard. Submitted 7-22-08.

RERC 2008p. Add. Transmission information dated 9-4-08. Letter from RPU, Cable diagrams, Updated load flow Table no 1. Submitted 9-4-08

RERC 2008q. RPU letter dated 9-8-08 confirming to submit SCE SIS agreement. Submitted 9-8-08.

RERC 2008r. RPU Operation standard practice 120. Submitted 9-8-08.

NERC (North American Electric Reliability Council) 2006. Reliability Standards for the Bulk Electric Systems of North America, May 2 2006.

WECC (Western Electricity Coordinating Council) 2002. NERC/WECC Planning Standards, August 2002.

DEFINITION OF TERMS

ACSR

Aluminum cable steel reinforced.

AAC

All Aluminum conductor.

Ampacity

Current-carrying capacity, expressed in amperes, of a conductor at specified ambient conditions, at which damage to the conductor is nonexistent or deemed acceptable based on economic, safety, and reliability considerations.

Ampere

The unit of current flowing in a conductor.

Kiloampere

(kA) 1,000 Amperes

Bundled

Two wires, 18 inches apart.

Bus

Conductors that serve as a common connection for two or more circuits.

Conductor

The part of the transmission line (the wire) that carries the current.

Congestion Management

Congestion management is a scheduling protocol, which provides that dispatched generation and transmission loading (imports) would not violate criteria.

Emergency Overload

See Single Contingency. This is also called an L-1.

Kcmil or KCM

Thousand circular mil. A unit of the conductor's cross sectional area, when divided by 1,273, the area in square inches is obtained.

Kilovolt (kV)

A unit of potential difference, or voltage, between two conductors of a circuit, or between a conductor and the ground. 1,000 Volts.

Loop

An electrical cul de sac. A transmission configuration that interrupts an existing circuit, diverts it to another connection and returns it back to the interrupted circuit, thus forming a loop or cul de sac.

Megavar

One megavolt ampere reactive.

Megavars

Megavolt Ampere-Reactive. One million Volt-Ampere-Reactive. Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system.

Megavolt ampere (MVA)

A unit of apparent power, equals the product of the line voltage in kilovolts, current in amperes, the square root of 3, and divided by 1000.

Megawatt (MW)

A unit of power equivalent to 1,341 horsepower.

Normal Operation/ Normal Overload

When all customers receive the power they are entitled to without interruption and at steady voltage, and no element of the transmission system is loaded beyond its continuous rating.

N-1 Condition

See Single Contingency.

Outlet

Transmission facilities (circuit, transformer, circuit breaker, etc.) linking generation facilities to the main grid.

Power Flow Analysis

A power flow analysis is a forward looking computer simulation of essentially all generation and transmission system facilities that identifies overloaded circuits, transformers and other equipment and system voltage levels.

Reactive Power

Reactive power is generally associated with the reactive nature of inductive loads like motor loads that must be fed by generation units in the system. An adequate supply of reactive power is required to maintain voltage levels in the system.

Remedial Action Scheme (RAS)

A remedial action scheme is an automatic control provision, which, for instance, would trip a selected generating unit upon a circuit overload.

SSAC

Steel Supported Aluminum Conductor.

SF6

Sulfur hexafluoride is an insulating medium.

Single Contingency

Also known as emergency or N-1 condition, occurs when one major transmission element (circuit, transformer, circuit breaker, etc.) or one generator is out of service.

Solid dielectric cable

Copper or aluminum conductors that are insulated by solid polyethylene type insulation and covered by a metallic shield and outer polyethylene jacket.

Switchyard

A power plant switchyard (switchyard) is an integral part of a power plant and is used as an outlet for one or more electric generators.

Thermal rating

See ampacity.

TSE

Transmission System Engineering.

TRV

Transient Recovery Voltage

Tap

A transmission configuration creating an interconnection through a sort single circuit to a small or medium sized load or a generator. The new single circuit line is inserted into an existing circuit by utilizing breakers at existing terminals of the circuit, rather than installing breakers at the interconnection in a new switchyard.

Undercrossing

A transmission configuration where a transmission line crosses below the conductors of another transmission line, generally at 90 degrees.

Underbuild

A transmission or distribution configuration where a transmission or distribution circuit is attached to a transmission tower or pole below (under) the principle transmission line conductors.

VISUAL RESOURCES

Testimony of Marie McLean

INTRODUCTION

Visual resources consist of the viewable natural and man-made features of the environment. In this section staff analyzes the impacts on visual resources resulting from the construction and operation of the Riverside Energy Resource Center (RERC), Units 3 and 4, to be located in Riverside, California. The California Environmental Quality Act (CEQA) requires that a determination of a proposed project's visual impacts be assessed.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

VISUAL RESOURCES Table 1 provides a general description of identified adopted federal, state, and local LORS pertaining to aesthetics, or preservation and protection of sensitive visual resources relevant to the proposed project.

VISUAL RESOURCES Table 1
Laws, Ordinances, Regulations, and Standards

Applicable LORS	Description
Federal	
Transportation Equity Act for the 21st Century of 1998, and Safe, Accountable, Flexible, and Efficient Transportation Equity Act of 2005.	Designed to protect federally managed lands or a recognized National Scenic Byway or All-American Road within its vicinity. Does not apply to this project.
State	
California Streets and Highways Code, Sections 260 through 263 – Scenic Highways	Designed to ensure the protection of highway corridors that reflect the State's natural scenic beauty.
Local	
County of Riverside 2003 General Plan, Area Plans, Volume I, Jurupa Area Plan; Santa Ana River Corridor	Designed to ensure the preservation of the unique features in the Jurupa area and to serve as guide for additional growth. More detailed land use designations are applied than for the countywide general plan. Santa Ana River Corridor is located adjacent to the project. The more detailed land use designations applicable to this project include: JURAP 7.2: Require development, where allowable, to be set back an appropriate distance from the top of bluffs to protect the natural and recreational values of the river and avoid public responsibility for property damage that could result from soil erosion or future floods JURAP 7.3: Encourage future development that borders the policy area to design for common access and views to and from the Santa Ana River.
City of Riverside General Plan 2025, Adopted November 2007 Open Space and Conservation Element Land Use and Urban Design Element	Santa Ana River Corridor listed as one of six major areas to serve as open space Santa Ana River Corridor listed as a major park with key objective to open the river to the city, improving access as well as the river's natural qualities
City of Riverside Zoning Regulations, Chapter 19.130; Industrial Zones (BMP, I, AI, and AIR)	Riverside Energy Resource Center (RERC) is currently zoned as a Business and Manufacturing Park Zone (BMP). Purpose of such a zone is to provide a district for low-intensity, low-impact industrial, office, and related uses.

SETTING

The City of Riverside, Riverside Public Utilities (RPU), is proposing to add two new simple cycle power plant units—Unit 3 and Unit 4—to the existing RERC site, which already houses Unit 1 and Unit 2. Units 1 and 2 have been operating since July 26, 2006. Once constructed, units 3 and 4 will provide approximately 95 MW of additional peaking capacity.

Bounded by Acorn Street to the west; to the south, Jurupa Avenue, a four-lane major arterial road running east/west to the project site; Payton Avenue to the east; and the Santa Ana River Trail to the north, the RERC is sited on 16 acres located adjacent to and on the east side of Riverside's Regional Water Quality Control Plant. The RERC is located in the depression of a three-sided earthen berm. The top of the north berm is approximately 45 feet high. The main access to the site is off Payton Avenue.

The two new units, to be located directly north of units 1 and 2, will occupy 2.2 acres of the site. The area is located in a business and manufacturing park zone, one of three industrial zones identified in the City of Riverside's zoning regulations.

The Santa Ana River Trail, which is part of the Santa Ana Regional Parkway, includes trails for horseback riding, hiking, and walking. The Santa Ana River, located at a base elevation below that of the RERC site, is within the Santa Ana River Trail.[1]

The unincorporated community of Pedley is located on the north side of the Santa Ana River Trail. A ten-to-fifteen foot solid masonry wall spans the regional parkway and provides a visual screen for the residential subdivisions in Pedley. Other residential areas are located within a one-mile radius of the project. The Riverside Municipal Airport is located approximately one-half mile south.

Publicly visible components of the proposed power plant include two 80–foot exhaust stacks; a two-bay expansion on the on-site switchyard; two ancillary buildings; two 43-foot combustion turbine generators; one 40-foot cooling tower; and a radio transmitter facility, which includes an equipment building as well as an 80-foot communications tower with the top of antenna at 96 feet.

The RERC will be surrounded by a 10-foot architectural block wall or nonreflective chain link fence, topped with one foot of barbed wire in areas not directly in public view. See **Visual Resources Figure 1** for a location map of the RERC.

[1] The development of the Santa Ana River Trail in Riverside began in the 1970s when Riverside County purchased the river bottom necessary to complete the majority of the trail (Santa Ana River Trail, Project Value and Location, Santa Ana Watershed Project Authority, ND).Today, the Santa Ana River Trail is a project of the counties of Riverside, San Bernardino, and Orange. Once completed, it will consist of a 100-mile recreational trail from the San Bernardino Mountains to the Pacific Ocean. The project is supported by $30 million in Proposition 84 (2006) funding, administered by the State Coastal Conservancy.

ASSESSMENT OF IMPACTS

This section includes information about the following:

1. Method and threshold for determining significance
2. Direct/indirect impacts and mitigation
3. Cumulative impacts and mitigation

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Visual resources consist of the various elements of the landscape that contribute to the visual character of a place. Those elements, either natural or human-made, include objects, vistas, and viewsheds. A visual assessment generally begins with an inventory of the visual resources of a particular site.

To determine a project's potentially significant impact on visual resources, Energy Commission staff reviews the project according to "Guidelines for the Implementation of the *California Environmental Quality Act*; Appendix G, "Environmental Checklist Form, Aesthetics." As required by the guidelines, staff determines a project's potentially significant impact on visual resources by evaluating whether the project would substantially:

1. Adversely affect a scenic vista.
2. Damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
3. Degrade the existing visual character or quality of the site and its surroundings.
4. Create a new source of light or glare that would adversely affect day or nighttime views in the area.

In preparing its assessment, staff reviewed federal, state, and local laws, ordinances, regulations, and standards. Staff also evaluated the proposed projects visual impact on the existing environmental setting based on key observation points (KOPs). KOPs are selected to be representative of the most critical locations from which the project would be seen.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Information about direct and indirect impacts and proposed mitigation is included in this section and grouped according to the questions found in the following CEQA Environmental Checklist Form.

VISUAL RESOURCES Table 1
CEQA Environmental Checklist Form—Aesthetics

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
AESTHETICS —Would the project:				
A. Have a substantial adverse effect on a scenic vista?				X
B. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
C. Substantially degrade the existing visual character or quality of the site and its surroundings?			X	
D. Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?			X	

A. Scenic Vista – No Impact

"Would the project have a substantial adverse effect on a scenic vista?"

For the purpose of this analysis, a *scenic vista* is defined as a distant view through and along a corridor or opening that exhibits a high degree of pictorial quality. No scenic vistas exist in the KOP1, KOP2, KOP5 viewsheds.

B. Scenic Resources – No Impact

"Would the project substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway corridor?"

For the purpose of this analysis, a scenic resource includes as a unique water feature such as a waterfall; transitional water such as river mouth ecosystems, lagoons, coastal lakes, and brackish wetlands; or part of a stream or river, or estuary. In addition, a scenic resource could also be a unique physical geological terrain such as rock masses, outcroppings, layers, or spires; a tree with a unique visual or historical importance such as a tree linked to a famous event or person or an ancient old-growth tree; historic building; or a designated federal scenic byway or state scenic highway corridor.

Riverside County has three officially designed scenic highway routes: State Route 62; portions of State Route 74; and State Route 243. In addition, the following state routes are eligible but not officially designed state scenic highways: portions of (1) State Route 111; (2) State Route 74; (3) State Route 91; and (4) Interstate 15.

State Route 91 runs through the City of Riverside. However, that portion of State Route 91 is not designed a State Scenic Highway; nor is it listed as eligible by the California Department of Transportation (CalTrans) (CalTrans 2008). Consequently, no eligible or designated state scenic highways are located within the area of the proposed project.[2] Also, the RERC is located in an industrial zone and does not include any scenic views.

C. Visual Character or Quality - Less than Significant Impact

"Would the project substantially degrade the existing visual character or quality of the site and its surroundings?"

The visual aspects evaluated according to this criterion, Visual Character or Quality, are organized into two categories, construction impacts and operational impacts.

Construction Impacts

Information about construction impacts are organized according to project site; laydown area; construction access road and primary parking area; and conclusion. Information about each follows.

Project Site

Located in an area zoned industrial and cleared on land cleared in the early 1990s, the Riverside Energy Resource Center's (RERC) Units 3 and 4 will be constructed on 2.2 acres of the existing 16 acres of the RERC site, immediately north of the existing two units and to the east of the City of Riverside's Regional Water Quality Control Plant. Construction activities for the project are scheduled to occur over a nine-month period, beginning in fourth quarter 2008 with commercial operation set for summer 2009.

The project will not require new off-site connections. Instead, the existing RERC switchyard will be expanded to allow the two new units to connect to the city's 69kV subtransmission system. Natural gas will be provided by Southern California Gas Company through the existing gas line and metering station.

The construction activities would be visible from Jurupa Avenue, which is located south of the location and runs parallel with it, and from the Santa Ana River Trail.

[2] The status of a state scenic highway changes from *eligible* to an officially designated state scenic highway when the local jurisdiction adopts a scenic corridor protection program; applies to the California Department of Transportation (CalTrans) for scenic highway approval; and is notified by CalTrans of the official designation.

Construction Access Road and Parking Area

Access to the site will be through the existing paved section of Payton Avenue. On the site, existing roads will be extended to provide access to the equipment areas of the two new units. The on-site roads will be used to move equipment and materials to the site.

Parking for construction workers would be located immediately west of the project. A number of parking spaces sufficient to meet the city's requirements will be provided (RERC Units 3 & 4 SPPEa).

Construction parking would be visible from Jurupa Avenue and Acorn Street and the Santa Ana River Trail.

Staging Area

RERC Units 3 and 4 will occupy approximately 2.2 acres of the 16-acre site. Approximately two acres of the remaining rough-graded, undeveloped portion of the site will be used for a laydown or staging area. The construction staging area would be visible from Jurupa Avenue and Acorn Street and the Santa Ana River Trail.

Conclusion

Overall, staff concludes that the project's proposed construction activities would generate a less than significant visual impact.

Operational Impacts

Five KOPs were submitted by the applicant. Staff selected three to use in its analysis and retained the applicant's numbering (KOP 1, 2, & 5). Two KOPs were not chosen (KOP 3 & 4) because the RERC was not clearly visible in the photographs. See **Visual Resources Figure 2** for the location of those KOPs. See **Appendix VR-1** for information about the process used to evaluate each KOP.

KOP 1, Eastbound Jurupa Avenue, Looking Northeast

This KOP represents the existing view for motorists looking northeast from approximately one-quarter mile south of the site, just west of the Jurupa Avenue and Acorn Street intersection. Jurupa Avenue, a four-lane roadway, is located in an industrial area and runs in an east-west alignment past the RERC site. The RERC site, located east of the city's Regional Water Quality Control Plant, begins approximately 500 feet north of Jurupa Avenue.

The water quality control plant has been in operation at this location since 1946 and underwent a major upgrade in 1995 (California Regional Water Quality Control Board, Santa Ana Region, Fact Sheet; 2001).The City of Riverside built RERC Units 1 and 2 on land located next to the plant in 2004. Units 3 and 4 would be constructed immediately north of Units 1 and 2.

The view from KOP1 is dominated by an undeveloped parcel of land located west of the project site and seasonally covered with grass. According to the City of Riverside's General Plan, that parcel as well as other vacant parcels located east of the plant site will be industrially developed. Development of vacant parcels west of the RERC site will severely block the view of the plant from this location.

Visual Sensitivity

KOP1 **(Visual Resources Figure 3)** represents a view of moderately low visual quality. This view, which already includes RERC Units 1 and 2, will be seen primarily by local workers and motorists while traveling eastbound on Jurupa. Because of the highly industrialized nature of this site, viewer concern is moderately low.

From this KOP, RERC Units 3 and 4 will have moderately low visibility. The RERC, located in a depression of a three-sided berm and set back about one-quarter mile from the street, is screened by trees and poles as well as by industrial buildings directly in front.

About 14,300 vehicles per day use Jurupa Avenue, the main entrance to the plant. Approximately 7,500 vehicles are traveling eastbound. Hence, the number of viewers will be high. However, their duration of view will be moderately low—about 10 to 20 seconds. Drivers will be focused on maneuvering the roadway. Passengers, who have a longer opportunity to view the site than drivers, will have their view disrupted by the car in which they are riding. In addition, workers and motorists are familiar with RERC's Units 1 and 2, which have been operating for two years and under construction for one year. The level of viewer exposure at this KOP is moderately low.

Visual sensitivity for this KOP is moderately low. The long-time industrial nature of this location, coupled with the already-existing Units 1 and 2 of the RERC, will present to motorists an industrial view that has existed for at least 50 years and a view of RERC site, which has existed for approximately three years.

Visual Change

Visual Resources Figure 4 represents the visual simulation of the proposed project as viewed from KOP1. The project would introduce to the site two 80–foot exhaust stacks; a two-bay expansion on the on-site switchyard; two ancillary buildings; two 43-foot combustion turbine generators; one 40-foot cooling tower; and a radio transmitter facility, which includes an equipment building as well as an 80-foot communications tower with the top of antenna at 96 feet.

The contrast resulting from the introduction of the new elements on the site is low. The height of the new elements is less because the site is lower than the ground level from which this KOP was taken. Units 3 and 4 as well as the communications tower and antenna have similar forms, lines, and colors as Units 1 and 2 as well as other existing elements in the landscape—trees and poles, for example.

From this KOP, the new additions to the RERC do not dominate. Instead, they are codominant with the existing RERC structures. They do not block any previously visible landscape features nor interrupt the continuity of views. Hence, both blockage and disruption of view are low. The visual change resulting from the introduction of Units 3 and 4, related buildings, and communications tower is low.

Visual sensitivity for this KOP is moderately low. The long-time industrial nature of this location, coupled with the already-existing Units 1 and 2 of the RERC, will present to motorists and workers a view that has existed for at least 50 years and a view of the RERC site, which has existed for approximately three. The moderately low rating for visual sensitivity and the low rating for visual change result in an impact of not significant.

KOP 2, Southeast from General Road East of Clay Street

KOP2 (**Visual Resources Figure 5**) represents a view of the project from one-half mile southeast from General Road east of Clay Street. Less than one-half mile long and running east/west, General Road borders the Santa Ana River Trail. The trail abuts the City of Riverside's Regional Water Quality Treatment Plant and terminates to the east in an industrial storage area. Consequently, General Road is not heavily traveled. Instead, it is primarily used by persons traveling to and from industrial buildings with entrances off General Road and the storage area at the end of the road.

Visual Sensitivity

The visual quality of KOP2 is moderately low. The location of this KOP is in an industrial area created by the city to encourage new jobs and tax revenue through a wide variety of industrial and manufacturing uses (Riverside *Municipal Code*, Chapter 19.130). Consequently, the area is likely to see continued industrial growth.

From this KOP viewers are likely to be workers and motorists traveling east and west on General Road as well as occupants of and visitors to industrial buildings. General Road terminates approximately one-quarter mile east in an industrial storage area.[3] The short length of the road combined with the industrial nature of the setting result in a moderately low level of viewer concern.

Viewed from this KOP, the visibility of the project from this KOP is low. The Santa Ana River Trail with trees, grass, and the top of the riverbank is visible in the foreground; the RERC in the background. In addition, the RERC is located in the depression of a berm. Consequently, its view from this area is diminished.

The number of viewers at this KOP is not available. However, because the road is less than one-mile long and ends in an industrial parking lot, the number of viewers is estimated to be low. The duration of view is moderately low—20 seconds or less. Drivers will be focusing their attention on the roadway; passengers' views will be obstructed by the vehicle in which they are riding.

Viewer exposure to the KOP is moderately low. Given the industrial setting of this KOP; the relatively small number of motorists traveling on this short road ending in the parking lot of an industrial warehouse; and the short duration of the view, viewer sensitivity from this location is moderately low.

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[3] An entry point to the Santa Ana River Trail is located near the same site as the storage area. However, the official entry point to the trail is the Hidden Valley Wildlife Area, which is located about four miles southwest of the RERC.

Visual Change

Visual Resources Figure 6 represents a photo simulation of the proposed project's publicly visible structures after completion of construction: the addition of two 80–foot exhaust stacks; a two-bay expansion on the on-site switchyard; two ancillary buildings; two 43-foot combustion turbine generators; one 40-foot cooling tower; and a radio transmitter facility, which includes an equipment building as well as an 80-foot communications tower with the top of antenna at 96 feet.

The visual contrast of the addition of the two new units, related structures, and communications tower is low. Because of their form, line, color, and texture, the new additions, including the communications tower, blends into the background. The dominance of the two new units, related buildings, and communications tower is low. Instead, the new elements are codominant with other elements in the viewshed. The new elements do not block or disrupt any scenic or high-quality views.

Visual change from this KOP is low based on the low level of contrast; dominance; and disruption of views presented by the addition of the two new units, related buildings, and communications tower.

The industrialized nature of the area in which this KOP is located combined with the short length of General Road results in a moderately low level of viewer sensitivity. That rating combined with the low level of visual change resulting from the addition of the two new units and related structures results in an impact of not significant.

KOP 5, Southeast from the Santa Ana River Trail

This view, **Visual Resources Figure 7**, represents the view closest to the RERC from the Santa Ana River Trail and the view recreationists will see while on the trail. From
this view, the Riverside Water Quality Treatment Plant is in the foreground; the RERC, about one-quarter mile in the background. The trail is enclosed on both sides with an eight-foot chain link fence.

Visual Sensitivity

Visual quality from this KOP is moderately low. Recreationists, who typically use the Santa Ana River Trail, generally have at least a medium level of concern. However, because the Santa Ana River Trail was developed long after this area was designated *industrial*, viewer concern for this area is moderately low.

The visibility of the project is moderately high and can be seen through the chain link fence. However, viewers can turn their attention to the Santa Ana River Trail. Viewers who look at the RERC will look across part of the city's Regional Water Quality Control Plant at a view muted by trees in the foreground. Those trees mimic the vertical lines of the RERC. The number of recreational viewers is moderate; and duration of view, moderately low. Consequently, viewer exposure is moderate; and visual sensitivity, moderately low.

Visual Change

Visual Resources Figure 8 represents a photo simulation of the project's publicly visible structures after completion of construction, including the addition of the 96-foot communications tower; two 43-foot combustion turbine generators; two 80-foot exhaust stacks and related buildings; and communications tower.

The contrast of the new units, related buildings, and communications tower with the existing site is low in terms of form, line, and color. The elements blend with the existing views; and the communications tower blends in with other vertical structures and trees on the site.

The addition of the two new units, related buildings, and communications tower does not dominate the view from the KOP. Instead, it is codominant with the existing two units, related buildings, and vertical structures on the site. In addition, the new additions do not block or disrupt views; hence the rating for view blockage is low. Consequently, the visual change resulting from the addition of Units 3 and 4 and related buildings and tower is low.

Visual sensitivity from this KOP is moderately low; visual change is low. The long-time industrial nature of this area greatly influences viewers' expectations as to views. The Santa Ana River Trail runs near this KOP and offers a contrasting view to the RERC for recreationists on the trail. However this area is dominated by industrial features and has been for many years. Consequently, viewers expect an industrial setting when in this area. The moderately low rating for visual sensitivity and the low rating for visual change resulting from the addition of Units 3 and 4 to the RERC result in a impact of not significant.

Linears

All new 68kV cabling would be contained within the RERC plant boundaries. The new units 3 and 4 at the RERC would be connected to the existing RERC switchyard and its connections with the existing two 69kV transmission lines. Hence, the new 68kV cabling would not substantially degrade the existing viewshed and cause a significant visual disturbance.

Visible Water Vapor Plumes

Whenever steam is used in generating electricity, water vapor plumes are formed. However, the visible water vapor plume analysis done for RERC Units 3 and 4 indicated a less than significant impact from visible water vapor plumes. Information about the methods used in making this determination follows.

Determination of Visibility

The visibility of water vapor plumes is determined through a process designed to assess the seasonal daylight clear-hour plume frequency. That is, a visible water vapor plume frequency of 20% of seasonal (November through April) daylight, no rain/fog, high visual contrast or "clear" hours is used to determine the significance of a potential plume. If the seasonal daylight clear-hour plume frequency is determined to be greater than 20%, plume dimensions are calculated; and a significance analysis of the plumes is included as part of the visual resources impact analysis.

Concerning RERC's units 3 and 4, a potential exists for visible water vapor plumes to be produced from the project's chiller cooling tower exhaust. However, the potential for visual plumes resulting from the upgraded project's cooling tower would be very limited and will not occur greater than staff's initial screening significance of 20% of seasonal daylight clear hours.

Determination of Potential

The very limited potential for plumes to be produced from the cooling tower of RERC units 3 and 4 is due to (1) the applicant-proposed operational limitations on the plant's capacity; and (2) more importantly, the limited operation of the chiller. However, the chiller would not operate during low temperatures when plumes are most likely to be formed. Consequently, the potential for visual plumes from RERC's units 3 and 4 cooling tower will be very limited and will not occur greater than staff's initial screening significance criteria of 20% of seasonal daylight clear hours.

No potential exists for visible water vapor plumes to be produced from the simple cycle gas turbine exhausts. The combination of the very high exhaust temperature and relatively low exhaust water content make visible plume formation impossible under the range ambient conditions normally experienced in the City of Riverside.

D. Light and Glare - Less than Significant Impact

Sources of existing night lighting in the vicinity of the RERC site includes street lights and area and perimeter lighting of existing commercial and industrial development. Generally that lighting is used for safety and security.

The RERC project also requires night-time lighting for operational safety and security. If project lighting were uncontrolled, the resulting direct light trespass and uplighting to the night time sky could cause significant adverse visual impacts on nearby sensitive visual receptors, including residences in the community of Pedley.

As was done for units 1 and 2, the applicant plans to minimize the impacts of offsite lighting. Specifically, the applicant will (1) install lights that are shielded and directed downward; and (2) separate switches for the lights on the tallest structures such as exhaust stacks. By installing switches, the lights could remain off except during maintenance. Based on the applicant's commitment to minimize light emissions offsite, the RERC project would not generate a substantial new source of light that could adversely affect night-time viewers.

In addition, the applicant proposes to use a surface treatment for major project structures in public view in a flat grey color and finish that would match the color and finish of units 1 and 2 and not create excessive glare. The applicant's commitment to treat project structures in a manner that minimizes contrast and glare and matches units 1 and 2 will ensure that the project would not be a source of substantial glare that could adversely affect views.

Laws, Ordinances, Regulations, and Standards

Staff also reviewed federal, state, and local laws, ordinances, regulations, and standards (LORS) as well as policies and guidelines to ensure that all applicable procedures for including aesthetics as well as for preserving and protecting sensitive visual resources were considered. Those LORS included local government land use planning documents, including the general plans and zoning ordinances.

According to a June 4, 2008 letter from Deputy City Attorney Susan D. Wilson to Felicia Miller, Riverside Project Manager, the city has been exempt from Title 19, Section 19.040.110 of the city's Municipal Code, Zoning, since September 27, 2005. On that day, the Riverside City Council amended Section 19.02.030 (renumbered section 19.040.110 in 2007) of the Riverside *Municipal Code* to exempt the City of Riverside from zoning regulations.

According to Title 19, Riverside *Municipal Code*, Zoning, Section 19.040.110, Public Projects, the provisions of section 19.040.110 does not apply to any buildings, improvements, lots, or premises owned, leased, operated, or controlled by the city or to any city project for public purposes by the city of Riverside.

Nevertheless, the city indicated that the project complies with all zoning regulations, including those that apply to visual standards (Data Request 57, June 6, 2008.) The city stressed its compliance with design review standards as included in Section 19.710.040 of the zoning code pertaining to buildings, structures, and signs, including the requirement to (1) develop a site to achieve a harmonious relationship with existing and proposed adjoining developments; (2) screen electrical and mechanical equipment, trash, and storage areas from public view; and (3) use harmonious or related colors and materials.

Cumulative Impacts

As defined in Section 15355 of the *CEQA Guidelines* (California *Code of Regulations*, Title 14), a cumulative impact is defined as a change in the environment that results from adding the effect of the project to those effects of closely-related past, present and probable future projects. That is, while any one project may not create a significant impact to visual resources, the combination of the new project and all existing or planned projects in the area may create significant impacts. A significant cumulative visual impact would depend on the degree to which (1) the view shed is altered; (2) views of a scenic resource are impaired; or (3) visual quality is diminished.

The introduction of the two new units, communications tower, and related buildings into the KOP 1, KOP2, and KOP5 viewsheds would generate less than a significant cumulative visual effect to aesthetics or preservation or protection of sensitive visual resources. The project's Units 1 and 2 have been operating at this location for two years. In addition, the project exists in an area that has been zoned industrial for at least 50 years and is located next to the City of Riverside Regional Water Quality Control Plant. Consequently, viewers' visual expectations generally are not high. However, although the City of Riverside is exempt from following its own zoning ordinances regarding certain height restrictions, design review procedures, and industrial zone regulations, the project was designed to comply with all zoning regulations, including those that apply to visual and design review standards (Data Request 57, June 8, 2008).

Conclusion

Although the construction, operation, and related activities would be visible from all three KOPs, staff believes that these construction and operation activities would generate less than significant visual impact for the following reasons:

1. The activities are taking place in a light industrial/manufacturing area on a site that already houses RERC's Units 1 and 2.

2. Persons who would be exposed to the site would likely be moving or have their attention directed elsewhere. Most viewers in the light industrial/manufacturing area of Jurupa Avenue and Acorn Street (KOP1), and General Road and Clay Street (KOP2) would be motorists. Consequently, the viewer's exposure to the site would be low. Recreationists using the Santa Ana River Trail (KOP 5)—runners, joggers, cyclists, walkers, for example—would also have low exposure to the site, either because their viewing time would be relatively short or they could turn their attention to the north toward the more scenic natural view of the river corridor. In addition, because the trail is located in an area zoned light industrial/manufacturing and has been used for industrial purposes for many years, people who use the trail generally do not expect a pristine viewing experience looking to the south.

3. Because of the temporary nature of the construction, the views of the project site will change almost daily. Consequently, the proposed project would not substantially degrade the existing visual character of the area.

REFERENCES

California *Streets and Highways Code*; Sections 260—263, Scenic Highways.

California Regional Water Quality Control Board, Santa Ana Region, Fact Sheet; 2001.

California Department of Transportation; www.dot.ca.gov/hq/LandArch/.

City of Riverside General Plan 2025, adopted November 2007; Open Space and Conservation Element; Land Use and Urban Design Element.

City of Riverside Public Utilities, Riverside Energy Resource Center Application, Small Power Plant Exemption (SPPE); April 29, 2004.

City of Riverside Zoning Regulations; Chapter 19.130; Industrial Zones (BMP, I, AI, and AIR).

County of Riverside 2003 General Plan; Area Plans, Volume 1, Jurupa Area Plan, Santa Ana River Corridor.

Santa Ana Watershed Project Authority, "Santa Ana River Trail Project: Value and Location," ND.

RERC2008a- M. Tatterson/M. Jones (tn45678) Application for Certification of an SPPE Dated 3/19/08. Submitted to Dockets 3/19/08.

RERC2008e- PE/M. Tatterson (tn46637) Data Request Responses 1-71. Submitted to Dockets 6/6/08.

APPENDIX VR-1

ENERGY COMMISSION VISUAL RESOURCE ANALYSIS EVALUATION CRITERIA

Energy Commission staff conducts a visual resource analysis according to Appendix G, “Environmental Checklist Form—Aesthetics,” California Environmental Quality Act (CEQA). The CEQA analysis requires that commission staff make a determination of impact ranging from “Adverse and Significant” to “Not Significant.”

Staff’s analysis is based on Key Observation Points or KOPs. KOPs are photographs of locations within the project area that are highly visible to the public—for example, travel routes; recreational and residential areas; and bodies of water as well as other scenic and historic resources.

Those photographs are taken to indicate existing conditions without the project and then modified to include a simulation of the project. Consequently, staff has a visual representation of the viewshed before and after a project is introduced and makes its analysis accordingly. Information about that analytical process follows.

Visual Resource Analysis Without Project

When analyzing KOPs of existing conditions without the project, staff considers the following conditions: visual quality, viewer concern, visibility, number of viewers, duration of view. Those conditions are then factored into an overall rating of viewer exposure and viewer sensitivity. Information about each condition and rating follows.

Visual Quality

An expression of the visual impression or appeal of a given landscape and the associated public value attributed to the resource. Visual quality is rated from *high* to *low*. A high rating is generally reserved for landscapes viewers might describe as picture-perfect.

Landscapes rated high generally are memorable because of the way the components combine in a visual pattern. In addition, those landscapes are free from encroaching elements, thus retaining their visual integrity. Finally, landscapes with high visual quality are visually coherent and harmonious when each element is considered as part of the whole. On the contrary, landscapes rated *low* are often dominated by visually discordant human alterations.

Viewer Concern

Viewer concern represents the reaction of a viewer to visible changes in the viewshed — an area of land visible from a fixed vantage point. For example, viewers have a high expectation for views formally designated as a scenic area or travel corridor as well as for recreational and residential areas. Viewers generally expect that those views will be preserved. Travelers on highways and roads, including those in agricultural areas, are generally considered to have moderate viewer concerns and expectations.

However, viewers tend to have low-to-moderate viewer concern when viewing commercial buildings. And industrial uses typically have the lowest viewer concern. Regardless, the level of concern could be lower if the existing landscape contains discordant elements. In addition, some areas of lower visual quality and degraded visual character may contain particular views of substantially higher visual quality or interest to the public.

Visibility

Visibility is a measure of how well an object can be seen. Visibility depends on the angle or direction of views; extent of visual screening; and topographical relationships between the object and existing homes, streets, or parks. In that sense, visibility is determined by considering any and all obstructions that may be in the sightline—trees and other vegetation; buildings; transmission poles or towers; general air quality conditions such as haze; and general weather conditions such as fog.

Number of Viewers

Number of viewers is a measure of the number of viewers per day who would have a view of the proposed project. *Number of viewers* is organized into the following categories: residential according to the number of residences; motorist according to the number of vehicles; and recreationists.

Duration of View

Duration of view is the amount of time to view the site. For example, a high or extended view of a project site is one reached across a distance in two minutes or longer. In contrast, a low or brief duration of view is reached in a short amount of time—generally less than ten seconds.

Viewer Exposure

Viewer exposure is a function of three elements previously listed, *visibility*, *number of viewers*, and *duration of view*. Viewer exposure can range from a *low* to *high*. A partially obscured and brief background view for a few motorists represents a low value; and unobstructed foreground view from a large number of residences represents a high value.

Visual Sensitivity

Visual sensitivity is comprised of three elements previous listed, *visual quality*, *viewer concern*, and *viewer exposure*. Viewer sensitivity tends to be higher for homeowners or people driving for pleasure or engaged in recreational activities and lower for people driving to and from work or as part of their work.

Visual Resource Analysis with Project

Visual resource analyses with photographic simulations of the project involve the elements of contrast, dominance, view blockage, and visual change. Information about each element follows.

Contrast

Contrast concerns the degree to which a project's visual characteristics or elements — form, line, color, and texture — differ from the same visual elements in the existing landscape. The degree of contrast can range from *low* to *high*. A landscape with forms, lines, colors, and textures similar to those of a proposed energy facility is more visually absorbent; that is, more capable of accepting those characteristics than a landscape in which those elements are absent.[4] Generally, visual absorption is inversely proportional to visual contrast.

Dominance

Dominance is a measure of (a) the proportion of the total field of view occupied by the field; (b) a feature's apparent size relative to other visible landscape features; and (c) the conspicuousness of the feature due to its location in the view.

A feature's level of dominance is lower in a panoramic setting than in an enclosed setting with a focus on the feature itself. A feature's level of dominance is higher if it is (1) near the center of the view; (2) elevated relative to the viewer; or (3) has the sky as a backdrop. As the distance between a viewer and a feature increases, its apparent size decreases; and consequently, its dominance decreases. The level of dominance ranges from *low* to *high*.

View Blockage

The extent to which any previously visible landscape features are blocked from view constitutes view disruption. The view is also disrupted when the continuity of the view is interrupted. When considering a project's features, higher quality landscape features can be disrupted by lower quality project features, thus resulting in adverse visual impacts. The degree of view disruption can range from *none* to *high*.

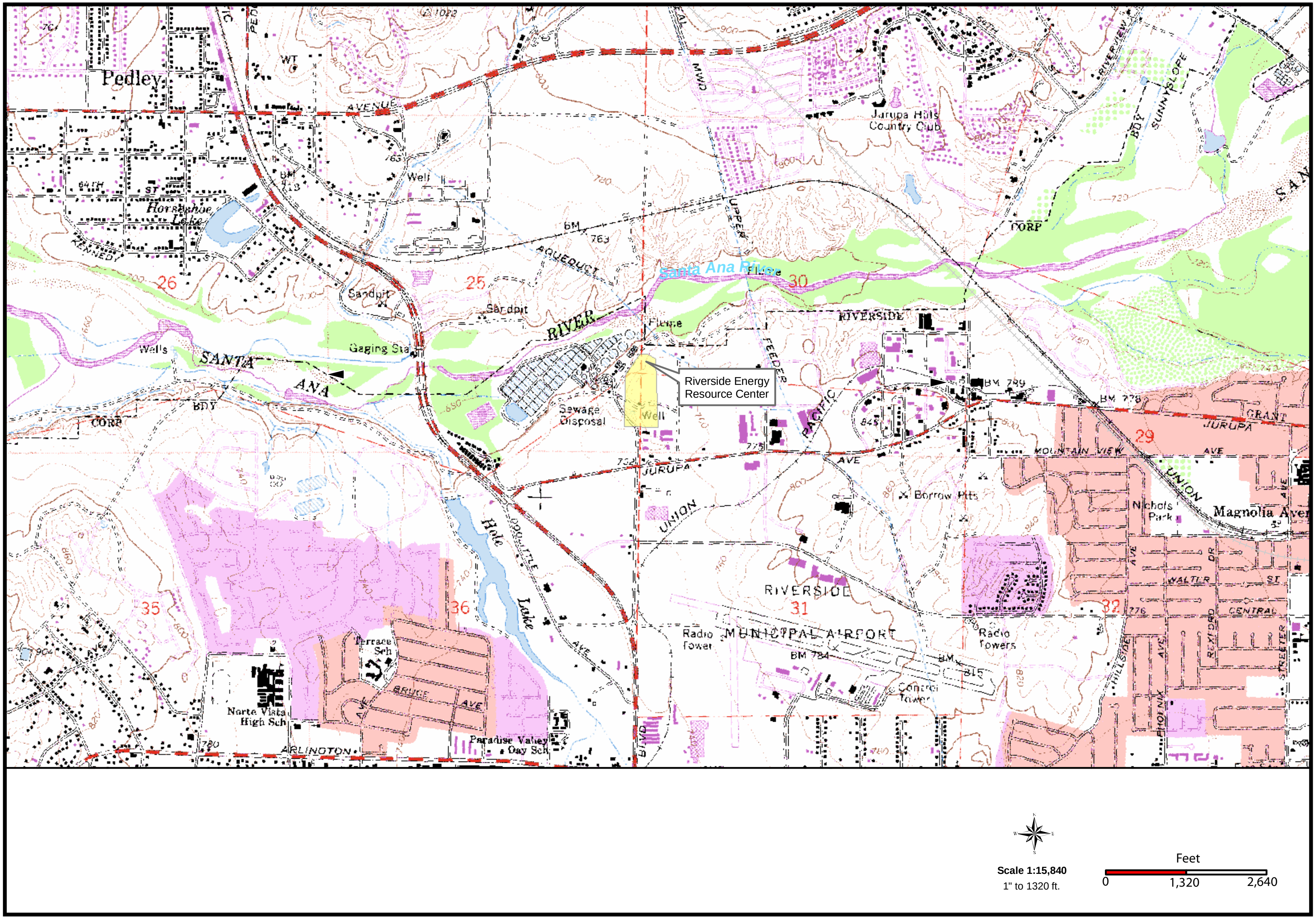
Visual Change

Visual change is a function of *contrast*, *dominance*, and *view disruption*. Generally, *contrast* and *dominance* contribute more to the degree of visual change than does *view disruption*.

[4] Typically, the Energy Commission does not consider texture in its visual analyses.

VISUAL RESOURCES - FIGURE 1

Riverside Energy Resource Center Units 3 & 4 - Location Map



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SOURCE: SPPE - Figure 1.3-2

VISUAL RESOURCES - FIGURE 2

Riverside Energy Resource Center Units 3 & 4 - KOP Location Map

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SOURCE: SPPE - Figure 16.11-2

VISUAL RESOURCES - FIGURE 3

Riverside Energy Resource Center Units 3 & 4 - KOP 1- Existing View
Looking Northeast from Intersection of Jurpa Avenue and Acorn Street

SOURCE: SPPE - Figure 6.11-2.1a

VISUAL RESOURCES - FIGURE 4

Riverside Energy Resource Center Units 3 & 4 - KOP 1- Visual Simulation
Looking Northeast from Intersection of Jurpa Avenue and Acorn Street

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SOURCE: SPPE - Figure 6.11-2.1b

VISUAL RESOURCES - FIGURE 5
Riverside Energy Resource Center Units 3 & 4 - KOP 2- Existing View
Looking Southeast from General Road East of Clay Street

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SOURCE: SPPE - Figure 6.11-2.2a

VISUAL RESOURCES - FIGURE 6

Riverside Energy Resource Center Units 3 & 4 - KOP 2- Visual Simulation
Looking Southeast from General Road East of Clay Street

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SOURCE: SPPE - Figure 6.11-2.2b

VISUAL RESOURCES - FIGURE 7

Riverside Energy Resource Center Units 3 & 4 - KOP 5 - Existing View

Looking Southeast from Santa Ana River Trail

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SOURCE: SPPE - Figure 6.11-2.2.5a

VISUAL RESOURCES - FIGURE 8

Riverside Energy Resource Center Units 3 & 4 - KOP 5 - Visual Simulation

Looking Southeast from Santa Ana River Trail

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SOURCE: SPPE - Figure 6.11-2.2.5b

WASTE MANAGEMENT

Testimony of Cheryl Closson

SUMMARY OF CONCLUSIONS

Management of wastes generated during construction and operation of the Riverside Energy Resource Center Units 3 and 4 project (RERC 3 & 4) would not result in any significant adverse impacts, and would comply with applicable waste management laws, ordinances, regulations, and standards, if the waste management measures outlined in the project's Application for a Small Power Plant Exemption (SPPE) and data responses are implemented.

INTRODUCTION

This section of the Draft Initial Study (DIS) provides an analysis of the potential waste management impacts associated construction and operation of the proposed RERC 3&4. The proposed project is a 95 megawatt (MW) simple cycle expansion to the existing Riverside Energy Resource Center (RERC), which is owned and operated by the City of Riverside. A brief overview of the project is provided below, along with discussions of the project's potential impacts. The technical scope of this analysis focuses on impacts from hazardous and non-hazardous solid wastes. Management and disposal of project wastewaters is addressed in the **Soil and Water Resources** section of this document. Additional information related to hazardous wastes as hazardous materials is also provided in the **Hazardous Materials Management** section of this document.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

The following federal, state, and local laws, ordinances, regulations, and standards (LORS) apply to the generation and management of waste. Staff's analysis includes consideration of the proposed project's compliance with these requirements.

WASTE MANAGEMENT Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal	
Title 42, United States Code (U.S.C.), §6901, et seq. Solid Waste Disposal Act of 1965 (as amended and revised by the Resource Conservation and Recovery Act of 1976, et al.)	The Solid Waste Disposal Act, as amended and revised by the Resource Conservation and Recovery Act (RCRA) et al., establishes requirements for the management of solid wastes (including hazardous wastes), landfills, underground storage tanks, and certain medical wastes. The statute also addresses program administration, implementation and delegation to states, enforcement provisions, and responsibilities, as well as research, training, and grant funding provisions. RCRA Subtitle C establishes provisions for the generation, storage, treatment, and disposal of hazardous waste, including requirements addressing: • Generator record keeping practices that identify quantities of hazardous wastes generated and their disposition; • Waste labeling practices and use of appropriate containers; • Use of a manifest when transporting wastes; • Submission of periodic reports to the United States Environmental Protection Agency (U.S. EPA) or other authorized agency; and • Corrective action to remediate releases of hazardous waste and contamination associated with RCRA-regulated facilities. RCRA Subtitle D establishes provisions for the design and operation of solid waste landfills. RCRA is administered at the federal level by U.S. EPA and its 10 regional offices. The Pacific Southwest regional office (Region 9) implements U.S. EPA programs in California, Nevada, Arizona, and Hawaii.
Title 42, U.S.C., §9601, et seq. Comprehensive Environmental Response, Compensation and Liability Act	The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as *Superfund*, establishes authority and funding mechanisms for cleanup of uncontrolled or abandoned hazardous waste sites, as well as cleanup of accidents, spills, or emergency releases of pollutants and contaminants into the environment. Among other things, the statute addresses: • Reporting requirements for releases of hazardous substances; • Requirements for remedial action at closed or abandoned hazardous waste sites, and brownfields; • Liability of persons responsible for releases of hazardous substances or waste; and • Requirements for property owners/potential buyers to conduct "all appropriate inquiries" into previous ownership and uses of the property to 1) determine if hazardous substances have been or may have been released at the site, and 2) establish that the owner/buyer did not cause or contribute to the release. A Phase I Environmental Site Assessment is commonly used to satisfy CERCLA "all appropriate inquiries" requirements.
Title 40, Code of	These regulations were established by U.S. EPA to implement the provisions of the Solid Waste Disposal Act and RCRA (described above).

Federal Regulations (CFR), Subchapter I – Solid Wastes	Among other things, the regulations establish the criteria for classification of solid waste disposal facilities (landfills), hazardous waste characteristic criteria and regulatory thresholds, hazardous waste generator requirements, and requirements for management of used oil and universal wastes. • Part 257 addresses the criteria for classification of solid waste disposal facilities and practices. • Part 258 addresses the criteria for municipal solid waste landfills. • Parts 260 through 279 address management of hazardous wastes, used oil, and universal wastes (i.e., batteries, mercury-containing equipment, and lamps). U.S. EPA implements the regulations at the federal level. However, California is an RCRA-authorized state, so most of the solid and hazardous waste regulations are implemented by state agencies and authorized local agencies in lieu of U.S. EPA.
Title 49, CFR, Parts 172 and 173. Hazardous Materials Regulations	These regulations address the United States Department of Transportation (DOT) established standards for transport of hazardous materials and hazardous wastes. The standards include requirements for labeling, packaging, and shipping of hazardous materials and hazardous wastes, as well as training requirements for personnel completing shipping papers and manifests. Section 172.205 specifically addresses use and preparation of hazardous waste manifests in accordance with Title 40, CFR, section 262.20.
State	
California Health and Safety Code (HSC), Chapter 6.5, §25100, et seq. Hazardous Waste Control Act of 1972, as amended	This California law creates the framework under which hazardous wastes must be managed in California. The law provides for the development of a state hazardous waste program that administers and implements the provisions of the federal RCRA program. It also provides for the designation of California-only hazardous wastes and development of standards (regulations) that are equal to or, in some cases, more stringent than federal requirements. The California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) administers and implements the provisions of the law at the state level. Certified Unified Program Agencies (CUPAs) implement some elements of the law at the local level.
Title 22, California Code of Regulations (CCR), Division 4.5. Environmental Health Standards for the Management of Hazardous Waste	These regulations establish requirements for the management and disposal of hazardous waste in accordance with the provisions of the California Hazardous Waste Control Act and federal RCRA. As with the federal requirements, waste generators must determine if their wastes are hazardous according to specified characteristics or lists of wastes. Hazardous waste generators must obtain identification numbers; prepare manifests before transporting the waste off site; and use only permitted treatment, storage, and disposal facilities. Generator standards also include requirements for record keeping, reporting, packaging, and labeling. Additionally, while not a federal requirement, California requires that hazardous waste be transported by registered hazardous waste transporters. The standards addressed by Title 22, CCR include: • Identification and Listing of Hazardous Waste (Chapter 11, §66261.1,

	et seq.). • Standards Applicable to Generator of Hazardous Waste (Chapter 12, §66262.10, et seq.). • Standards Applicable to Transporters of Hazardous Waste (Chapter 13, §66263.10, et seq.). • Standards for Universal Waste Management (Chapter 23, §66273.1, et seq.). • Standards for the Management of Used Oil (Chapter 29, §66279.1, et seq.). • Requirements for Units and Facilities Deemed to Have a Permit by Rule (Chapter 45, §67450.1, et seq.). The Title 22 regulations are established and enforced at the state level by DTSC. Some generator and waste treatment standards are also enforced at the local level by CUPAs.
HSC, Chapter 6.11 §§25404 – 25404.9 Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program)	The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the six environmental and emergency response programs listed below. • Aboveground Petroleum Storage Act requirements for Spill Prevention, Control, and Countermeasure (SPCC) Plans. • Hazardous Materials Release and Response Plans and Inventories (Business Plans). • California Accidental Release Prevention (CalARP) Program. • Hazardous Material Management Plan / Hazardous Material Inventory Statements. • Hazardous Waste Generator / Tiered Permitting Program. • Underground Storage Tank Program. The state agencies responsible for these programs set the standards for their programs while local governments implement the standards. The local agencies implementing the Unified Program are known as CUPAs. The Riverside County Community Health Agency, Department of Environmental Health is the CUPA for the RERC 3 & 4 project. Note: The Waste Management analysis only considers application of the Hazardous Waste Generator/Tiered Permitting element of the Unified Program.
Title 27, CCR, Division 1, Sub-division 4, Chapter 1, §15100, et seq. Unified Hazardous Waste and Hazardous Materials Management Regulatory Program	While these regulations primarily address certification and implementation of the program by the local CUPAs, the regulations do contain specific reporting requirements for businesses. • Article 9 – Unified Program Standardized Forms and Formats (§§ 15400–15410). • Article 10 – Business Reporting to CUPAs (§§15600–15620).
Public Resources Code, Division 30,	The California Integrated Waste Management Act (CIWMA) establishes mandates and standards for management of solid waste in California.

§40000, et seq. California Integrated Waste Management Act of 1989	The law addresses solid waste landfill diversion requirements; establishes the preferred waste management hierarchy (source reduction first, then recycling and reuse, and treatment and disposal last); sets standards for design and construction of municipal landfills; and addresses programs for county waste management plans and local implementation of solid waste requirements.
Title 14, CCR, Division 7, §17200, et seq. California Integrated Waste Management Board	These regulations implement the provisions of the California Integrated Waste Management Act and set forth minimum standards for solid waste handling and disposal. The regulations include standards for solid waste management, as well as enforcement and program administration provisions. • Chapter 3 – Minimum Standards for Solid Waste Handling and Disposal. • Chapter 3.5 – Standards for Handling and Disposal of Asbestos Containing Waste. • Chapter 7 – Special Waste Standards. • Chapter 8 – Used Oil Recycling Program. • Chapter 8.2 – Electronic Waste Recovery and Recycling.
Local	
Riverside County Ordinance 615.3	Requires facilities that generate hazardous waste to report and obtain a permit from the Riverside County Community Health Agency, Department of Environmental Health (the CUPA).
Policies	
Riverside County, Countywide Integrated Waste Management Plan	This document sets forth the county's goals, policies, and programs for reducing dependence on landfilling solid wastes and increasing source reduction, recycling, and reuse of products and waste, in compliance with the CIWMA. The plan also addresses the siting and development of recycling and disposal facilities and programs within the county.

SETTING

The proposed RERC 3 & 4 would consist of the construction and operation of a 95 MW expansion to the existing RERC powerplant peaking facility. The project would be located on 2.2 acres of the 16-acre RERC site, with an additional two acres to be used for construction laydown. The existing facility consists of two combustion turbine generators (CTGs), a switchyard, and connections for natural gas, water, and electrical transmission. The proposed RERC 3 & 4 would add two natural gas-fired CTGs to the site, expand the existing switchyard, add two demineralized water storage tanks to the existing make-up water system, and add a new dispatch/scheduling building and a water laboratory.

The proposed project would also employ selective catalyst reduction (SCR) and oxidation catalyst systems to control carbon monoxide and NOx emissions, and use a zero liquid discharge (ZLD) system to manage project wastewater. In addition, all linear facilities and gas, water, and transmission connections for the RERC 3 & 4 would be located within the existing RERC site.

IMPACTS

The Energy Commission staff's objective in conducting this review is to ensure that no significant adverse impacts would result from waste generation and waste management activities associated with project construction and operation. Staff has evaluated the project in accordance with the following California Environmental Quality Act (CEQA) Guidelines, Appendix G, Environmental Checklist Form elements related to wastes and waste management (CEQA 2008). The checklist identifies staff's assessment of the potential impacts. Discussions on the direct, indirect, and cumulative impacts are provided below the checklist.

WASTE MANAGEMENT Table 2
CEQA Environmental Checklist Form – Waste-Related Elements

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
HAZARDS AND HAZARDOUS MATERIALS – Would the project:				
A. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
B. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
C. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
UTILITIES AND SERVICE SYSTEMS – Would the project:				
D. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			X	

DISCUSSION OF IMPACTS

The proposed project would be considered to have significant waste-related impacts if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Result in the emission or handling of hazardous materials, substances, or waste within ¼ -mile of an existing or proposed school.

- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and would create a significant hazard to the public or environment.
- Not be serviced by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs.
- Not comply with federal, state, and local statutes and regulations (LORS) related to solid waste.

The basis for each conclusion provided in the checklist is discussed further below.

A. Create a significant hazard to the public through routine transport, disposal or use of hazardous materials: Less Than Significant Impact

Existing Site Conditions

As previously noted, the proposed RERC 3 & 4 would be located on the existing 16-acre RERC powerplant facility site. The existing RERC facility has been in operation since June 2006. In order to identify any existing or potential environmental concerns or contamination that could impact the project, a Phase I Environmental Site Assessment (ESA) of the RERC site was conducted by Bureau Veritas North America, Inc. in June 2008 (RERC 2008e, Waste Management Attachment 1). The Phase I ESA was conducted according to American Society for Testing and Materials (ASTM) Standard E1527-05 (Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process) and included visual inspection of the property, along with review of records and client interviews, to identify conditions indicative of existing or potential releases of hazardous substances or petroleum products (known as "recognized environmental conditions" or RECs).

The June 2008 Phase I ESA reported no evidence of RECs in connection with the RERC site. Staff has reviewed the Phase I ESA and concurs with the conclusions reached in the report and concludes that there would be no impact to the public or the environment from existing project site conditions.

Construction

Construction of the proposed RERC 3 & 4 is estimated to take nine (9) months and would generate nonhazardous and hazardous wastes in both solid and liquid forms, as described below.

Non-hazardous solid wastes that would be generated during project construction include minor amounts of wood paper, glass, plastics, concrete, and scrap metal. These wastes would be recycled as much as possible. Non-recyclable wastes would be properly transported to and disposed of at a local landfill.

Hazardous wastes anticipated to be generated during construction would include waste oil, used solvents and curing solutions, paint, and spent welding materials. The wastes would be recycled to the extent possible (or in the case of paints, reused on other projects). Any non-recyclable hazardous waste would be properly manifested, transported, and disposed at a permitted Class I landfill.

Operation and Maintenance

The proposed RERC 3 & 4 is designed with a 30-year facility life. However, the actual life of the facility would depend on several factors, including need for facility operation, equipment use and maintenance, and costs for fuel. (RERC 2008a, page 2-25.) The proposed project would generate both non-hazardous and hazardous solid and liquid wastes during facility operation, as discussed below. [Note: The management and disposal of project operation wastewaters and ZLD concentrated brines is addressed in the **Soil and Water Resources** section of this DIS.]

Nonhazardous solid wastes expected to be generated during plant operation would include paper, plastic, empty containers, and general municipal solid waste. Wastes would be recycled as much as possible and any non-recyclable wastes would be properly transported to and disposed of at a local landfill.

Hazardous wastes expected to be generated during routine project operation include turbine water wash, waste oil, oil filters, gas compressor oil/condensate, oily rags and adsorbent, oily rock and dirt, oil from plant drains, selective catalytic reduction (SCR) catalysts, propylene glycol (antifreeze), and typical office/business universal wastes (such as disposable batteries, copier/printer toner cartridges, etc.) Most of the waste would be recycled (including the SCR catalysts, antifreeze, and waste oil and oil filters), and non-recyclable hazardous waste would be properly manifested, transported, and disposed of at a permitted Class I Hazardous waste landfill.

B. Handle hazardous waste within one-quarter mile of an existing or proposed school: No Impact

There are no schools within 3,000 feet of the proposed project site (RERC 2008a, Section 6.8.1.1 and Appendices 6.8-B and 6.8-C). At this distance, there is no risk of project site hazardous waste management causing an off-site impact to existing or proposed schools.

C. Located on a hazardous waste site: No Impact

The proposed site is not located on a hazardous waste/hazardous materials site identified pursuant to Government Code section 65962.5.

D. Served by a landfill with sufficient capacity: Less Than Significant Impact

Project construction would generate approximately 90 cubic yards of non-hazardous construction debris (i.e., wood, metal, and concrete) and 45 cubic yards of municipal solid waste (i.e., paper, food, plastic, etc.), while project operation would generate approximately 1,800 cubic yards of municipal solid waste over the 30-year life of the project. (RERC 2008g)

While much of this non-hazardous waste would be recycled, any non-recyclable wastes would be disposed of at the Lamb Canyon Landfill in the city of Beaumont, Riverside County. Lamb Canyon Landfill is currently permitted to accept 3,000 tons of waste per day. The permitted capacity of the landfill is 34,292,000 cubic yards, with 20,908,171 cubic yards of capacity remaining (CIWMB 2008). Even without consideration of potential waste reductions attributable to recycling, the total amount of all non-hazardous solid wastes expected to be generated from both project construction and operation would only be 1,935 cubic yards. This amount represents less than 0.01% of the remaining capacity of the Lamb Canyon Landfill. Therefore, staff concludes that any impacts on the Lamb Canyon Landfill's available capacity from disposal of project wastes would be less than significant.

Similarly, project construction and operation is expected to generate only minor amounts of hazardous wastes (mainly waste oils and oily solid waste). The state's Class I (hazardous waste) landfills at Buttonwillow (Clean Harbors, Inc.) and Kettleman Hills (Chemical Waste Management, Inc.) have a combined remaining capacity of approximately six (6) million cubic yards (CIWMB 2008). Staff concludes that the impact of project-generated hazardous wastes on Class I landfill capacity would be less than significant, given the small volume of waste expected to be generated by the project, the potential for waste volume reduction through recycling, and the large volume of Class I landfill capacity remaining.

CUMULATIVE IMPACTS

Cumulative impacts consist of impacts that are created as a result of the proposed project in combination with impacts from other closely related past, present, or reasonably foreseeable future projects. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over time. (Cal. Code Regs., tit. 14, §15355.)

In addition to the proposed RERC 3 & 4, the continued operation of the existing RERC facility represents a closely related project that needs to be considered for cumulative impacts. Once operational, the wastes from the proposed RERC 3 & 4 project would be managed together with wastes from the existing RERC facility. This would incrementally increase the volumes of waste requiring offsite management and disposal at local landfills. However, staff has concluded that the small volumes of hazardous and non-hazardous wastes expected to be generated by the RERC 3 & 4 project would result in a less than significant cumulative impact on both local recycling and disposal facilities and regional landfills.

AGENCY OR PUBLIC COMMENTS

No agency or public comments on the proposed project's waste management elements have been received to date.

CONCLUSIONS

Management of hazardous and non-hazardous wastes generated during construction and operation of the RERC 3 & 4 would not result in any significant adverse impacts, and would comply with waste management LORS, if the waste management measures outlined in the project SPPE application and data responses are implemented and maintained throughout the life of the project.

PROPOSED CONDITIONS OF EXEMPTION

No conditions of exemption are proposed for the RERC 3 & 4 project.

REFERENCES

CEQA 2008 – California Environmental Quality Act (CEQA) Guidelines. Title 14, California Code of Regulations, section 15000 and the following (Cal. Code Regs., tit. 14, §15000 et seq.).

CIWMB 2008 – California Integrated Waste Management Board, Solid Waste Information System (SWIS) Database. Http://www.ciwmb.ca.gov/SWIS/.

RERC 2008a – CEC/M. Jones (tn45678) Application for a Small Power Plant Exemption (SPPE), dated 3/19/08. Submitted to Dockets 3/19/08.

RERC 2008e – PE/M. Tatterson (tn46637) Data Request Responses 1-71. Submitted to Dockets 6/6/08.

RERC 2008g – PE/M. Tatterson (tn46637) Updated Responses and Additional Information for the 6/26/08 Data Response and Issue Resolution Workshop. Submitted to Dockets 7/3/08.

RERC 2008m – C. Closson/B. Gill (tnxxxxx) E-mail correspondence regarding project trash management. Submitted to Dockets 9/2/08.

GENERAL CONDITIONS OF EXEMPTION

Testimony of Dale Rundquist

INTRODUCTION

The Riverside Energy Resource Center Units 3 and 4 (Expansion Project) (Riverside 3 and 4) Project Compliance Plan has been established as required by Section 25532 of the Public Resources Code. The plan provides a means for assuring that the facility is constructed and operated in compliance with air and water quality, public health and safety, other applicable laws, ordinances, regulations and standards, and conditions of exemption.

The Compliance Plan is divided into two sections:

1. Compliance general conditions of exemption which specify the framework for record keeping and reporting throughout the construction and operation phases of the project; and,

2. Conditions of exemption which contain measures that must be taken to mitigate any and all potential adverse project impacts to an insignificant level.

The compliance general conditions are presented first. The conditions of exemption follow and are organized by technical area.

Each condition of exemption has a verification statement describing the means by which compliance with the condition can be verified. The verification procedures may be modified by the Energy Commission Compliance Project Manager (CPM) as necessary to ensure compliance with the adopted conditions of exemption. Verification of compliance with the conditions will also be accomplished by periodic reports filed by the project owner as required by the general conditions, auditing of project records, and by staff inspections of the power plant site and related facilities.

GENERAL CONDITIONS OF EXEMPTION DEFINITIONS

To ensure consistency, continuity and efficiency, the following terms, as defined, apply to all technical areas, including conditions of certification:

SITE MOBILIZATION:

Moving trailers and related equipment onto the site, usually accompanied by minor ground disturbance, grading for the trailers and limited vehicle parking, trenching for utilities, installing utilities, grading for an access corridor, and other related activities. Ground disturbance, grading, etc. for site mobilization are limited to the portion of the site necessary for placing the trailers and providing access and parking for the occupants. Site mobilization is for temporary facilities and is therefore not considered construction.

GROUND DISTURBANCE:

Ground disturbance consists of onsite activity that results in the removal of soil or vegetation, boring, trenching or alteration of the site surface. This does not include driving or parking a passenger vehicle, pickup truck, or other light vehicle, or walking on the site.

GRADING:

Onsite activity conducted with earth-moving equipment that results in alteration of the topographical features of the site such as leveling, removal of hills or high spots, or moving of soil from one area to another.

CONSTRUCTION:

[From section 25105 of the Warren-Alquist Act.] Construction refers to onsite work to install permanent equipment or structures for any facility. Construction does **not** include the following:

a. The installation of environmental monitoring equipment.

b. A soil or geological investigation.

c. A topographical survey.

d. Any other study or investigation to determine the environmental acceptability or feasibility of the use of the site for any particular facility.

e. Any work to provide access to the site for any of the purposes specified in a., b., c., or d.

COMPLIANCE PROJECT MANAGER RESPONSIBILITIES

A Compliance Project Manager (CPM) will be designated to oversee compliance with the general compliance conditions and conditions of exemption. The assigned CPM, after consultation with the appropriate technical staff, and approval of Energy Commission management and responsible agencies, shall:

1. Ensure that compliance files are established and maintained for the Riverside 3 and 4 project;

2. Track compliance filings;

3. Ensure the timely processing of proposed changes to the Energy Commission Decision;

4. Use all available means to encourage the resolution of disputes; and,

5. Coordinate compliance monitoring activities of Energy Commission and delegate agency staff.

PROJECT OWNER RESPONSIBILITY

It shall be the responsibility of the project's owners and operators, to ensure that the compliance general conditions and all conditions of exemption are satisfied. Riverside 3 and 4 must comply with the conditions of exemption and compliance general conditions. Failure to comply with any of the conditions of exemption or the compliance general conditions may result in reopening of the case and revocation of the SPPE, or other action as appropriate.

Riverside 3 and 4 shall send all verification submittals to the CPM whether such condition was satisfied or work performed by Riverside 3 and 4 or other agent, and whether or not such verification was also submitted to the CPM by an agent.

COMPLIANCE RECORD

Riverside 3 and 4 shall maintain, for the life of the project, files of all condition of exemption and compliance general condition related correspondence, and final as-built drawings.

The Energy Commission shall maintain as a public record:

1. All documents received regarding compliance with the compliance general conditions and conditions of exemption;

2. All complaints filed with the Energy Commission; and,

3. All petitions for changes to conditions and documentation of the resulting staff or Energy Commission action taken.

COMPLIANCE SUBMITTALS

All compliance submittals and correspondence pertaining to compliance matters shall include a cover letter with a description of the submittal and a reference to the compliance general condition and/or the condition of exemption number(s) which the submittal is intended to satisfy.

All submittals shall be addressed as follows:

Compliance Project Manager
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814

CONSTRUCTION COMPLIANCE REPORTS

The project owner must submit construction compliance reports to assist the CPM in tracking activities and monitoring compliance with the terms and conditions of the Energy Commission Decision. During construction, the project owner or authorized agent will submit Monthly Compliance Reports. These reports, and the requirement for an accompanying compliance matrix, are described below.

COMPLIANCE MATRIX

A compliance matrix shall be submitted by the project owner to the CPM along with each monthly compliance report. The compliance matrix is intended to provide the CPM with the current status of all compliance conditions in a spreadsheet format. The compliance matrix must identify:

1. the technical area,
2. the condition of exemption number,
3. a brief description of the verification action or submittal required by the condition,
4. the date the submittal is required (e.g., 60 days prior to construction, after final inspection, etc.),
5. the expected or actual submittal date,
6. the date a submittal or action was approved by the Chief Building Official (CBO), CPM, or delegate agency, if applicable, and
7. the compliance status for each condition of exemption (e.g., “not started”, “in progress” or “completed date”).

Completed or satisfied conditions of exemption do not need to be included in the compliance matrix after they have been identified as completed/satisfied in at least one monthly compliance report.

PRE-CONSTRUCTION MATRIX

Prior to commencing construction a compliance matrix addressing only those conditions of exemption, if any, that must be fulfilled before the start of construction shall be submitted by the project owner to the CPM. This matrix will be included with the project owner’s **first** compliance submittal. It will be in the same format as the compliance matrix referenced above.

TASKS PRIOR TO START OF CONSTRUCTION

Construction shall not commence until the pre-construction matrix is submitted, all pre-construction conditions of exemption, if any, have been complied with, and the CPM has issued a letter to the project owner authorizing construction. Project owners frequently anticipate starting project construction as soon as the project is exempted. In some cases it may be necessary for the project owner to file submittals prior to exemption if the required lead-time for a required compliance event extends beyond the date anticipated for start of construction. It is also important that the project owner understand that pre-construction activities that are initiated prior to exemption are performed at the owner’s own risk. Failure to allow specified lead-time may cause delays in start of construction.

Various lead times for verification submittals to the CPM for conditions of exemption are established to allow sufficient staff time to review and comment, and if necessary, allow the project owner to revise the submittal in a timely manner. This will ensure that project construction may proceed according to schedule.

The first construction Monthly Compliance Report [if required based on conditions of exemption] is due the month following the Energy Commission business meeting date on which the project was approved, unless otherwise agreed to by the CPM. The first Monthly Compliance Report shall include an initial list of dates for each of the events identified on the Key Events List. The Key Events List is found at the end of this section.

During pre-construction and construction of the project, the project owner or authorized agent shall submit an original and an electronic copy or CD of the Monthly Compliance Report within 10 working days after the end of each reporting month. Monthly Compliance Reports shall be clearly identified for the month being reported. The reports shall contain at a minimum:

1. a summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule;

2. documents required by specific conditions to be submitted along with the Monthly Compliance Report. Each of these items must be identified in the transmittal letter, and should be submitted as attachments to the Monthly Compliance Report;

3. an initial, and thereafter updated, compliance matrix which shows the status of all conditions of exemption (fully satisfied and/or closed conditions do not need to be included in the matrix after they have been reported as closed);

4. a list of conditions which have been satisfied during the reporting period, and a description or reference to the actions which satisfied the condition;

5. a list of any submittal deadlines that were missed accompanied by an explanation and an estimate of when the information will be provided;

6. a cumulative listing of any approved changes to conditions of certification;

7. a listing of any filings with, or permits issued by, other governmental agencies during the month;

8. a projection of project compliance activities scheduled during the next two months. The project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance with conditions of exemption;

9. a listing of the month’s additions to the on-site compliance file;

10. any requests to dispose of items that are required to be maintained in the project owner’s compliance file; and

11. a listing of complaints, notices of violation, official warnings, and citations received during the month; a description of the resolution of any complaints which have been resolved, and the status of any unresolved complaints.

CONFIDENTIAL INFORMATION

Any information which Riverside 3 and 4 deems proprietary shall be submitted to the Energy Commission Docket Unit (Mail Stop 4) to be processed pursuant to California Code of Regulations Title 20 section 2505(a). Any information which is determined to be confidential shall be kept confidential as provided for in CCR Title 20 section 2501 et seq. Information deemed not to be confidential will become public information.

ACCESS TO THE FACILITY

The CPM, or other designated Energy Commission staff or agent, shall be guaranteed and granted access at any time to the project site, transmission line right-of-way, and related sites to conduct audits, inspections, surveys, or general site visits.

POST CERTIFICATION CHANGES TO THE ENERGY COMMISSION DECISION

For the life of the project, the project owner must provide written notification to the CPM when planning changes to the project description. When a proposed change affects the conditions of exemption, the project owner must file a petition for the change with the CPM. The petition must contain the following information:

1. A complete description of the proposed modification(s), including proposed new language for the condition(s) of exemption that will be affected;

2. A discussion of the necessity for the proposed modification(s), including an explanation of why the modification was not considered during the original exemption proceeding for the project, and an explanation of the new information that has made the proposed modification necessary;

3. An analysis of the potential impacts the modification may have on the environment and the proposed measures to mitigate all potential impacts to a level of insignificance; and

4. A list of the property owners potentially affected by the proposed modifications.

The CPM will review petition filings and may authorize those petitions where there is no possibility that the modification(s) will result in a significant effect on the environment, or cause the project not to comply with any applicable laws, ordinances, regulations, or standards. Full Commission approval will be required for petitions that do not meet the above criteria.

A. Ownership or Operator Changes

The project owner must notify the CPM in writing of any changes in ownership including identification of the new owner [contact person, address, phone number], any changes in the operational relationship between the owner and the operator, and a statement signed by the new owner that the new owner understands the Compliance Plan and the Conditions of Exemption, and agrees to abide by those duties and obligations as described and intended by the conditions of exemption.

The project owner of record must provide to the CPM notice of any change in project ownership, as described above, for the life of the project.

KEY EVENT LIST

PROJECT: Riverside Energy Resource Center Units 3 and 4 (Expansion Project)

DOCKET #: 08-SPPE-1

COMPLIANCE PROJECT MANAGER: Dale Rundquist

EVENT DESCRIPTION	DATE
Certification Date	
Online Date	
POWER PLANT SITE ACTIVITIES	
Start Site Mobilization	
Start Ground Disturbance	
Start Rough Grading	
Start Construction	
First Combustion of Gas Turbine	
Start Commercial Operation	
Complete All Construction	
TRANSMISSION LINE ACTIVITIES	
Start T/L Construction	
SYNCHRONIZATION WITH GRID	
COMPLETE T/L CONSTRUCTION	
FUEL SUPPLY LINE ACTIVITIES	
Start Fuel Supply Line Construction	
COMPLETE FUEL SUPPLY LINE CONSTRUCTION	
WATER SUPPLY LINE ACTIVITIES	
START WATER SUPPLY LINE CONSTRUCTION	
COMPLETE WATER SUPPLY LINE CONSTRUCTION	

RIVERSIDE ENERGY RESOURCE CENTER
PREPARATION TEAM

PROJECT MANAGER	FELICIA MILLER
STAFF ATTORNEY	DEBORAH DYER
PROJECT ASSISTANT	MINEKA FOGGIE
AIR QUALITY	WILLIAM WALTERS
BIOLOGICAL RESOURCES	BRIAN McCOLLOUGH
COMPLIANCE	DALE RUNDQUIST
CULTURAL RESOURCES	BEVERLY BASTIAN
ENERGY RESOURCES	ERIN BRIGHT
GEOLOGY, MINERAL RESOURCES & PALEONTOLOGY	MIKE S. LINDHOLM, P.G.
HAZARDOUS MATERIALS	ALVIN J. GREENBERG, Ph.D & RICK TYLER
LAND USE	AMANDA STENNICK
NOISE & VIBRATION	STEVE BAKER
PUBLIC HEALTH	OBED ODEMELAM
SOCIOECONOMICS	JOSEPH DIAMOND
SOIL & WATER RESOURCES	CASEY WEAVER, P.G.
TRAFFIC AND TRANSPORTATION	JAMES ADAMS
TRANSMISSION LINE SAFETY & NUISANCE	OBED ODOEMELAM, Ph.D.
TRANSMISSION SYSTEM ENGINEERING	AJOY GUHA, P.E., & MARK HESTERS
VISUAL RESOURCES	MARIE McLEAN
WASTE MANAGEMENT	CHERYL CLOSSON

DECLARATION OF
Felicia Miller

I, Felicia Miller declare as follows:

1. I am presently employed by the California Energy Commission in the Facilities Siting Office of the Energy Facilities Siting Division as Project Manager.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony for the Riverside 1 & 2 Project based on my independent analysis of the Small Power Plant Exemption and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated:________________________ Signed: Original Signature in Dockets

At: Sacramento, California

Felicia Miller

California Energy Commission
1516 Ninth Street, MS-15
Sacramento, California 95814
(916) 654-4640

Professional Experience

April 2007 to present

California Energy Commission – Planner II - Siting Project Manager

Plan, organize, direct and manage the State regulatory process for electric generating plants from application through issuance of permit. Plan, organize and direct the efforts of 23 disciplinary environmental and engineering staff in actions related to the California Environmental Quality Act (CEQA) requirements. Recommend actions, policies and procedures affecting the project and commission program direction. Conduct public workshops and hearings related to proposed projects. I Compile, edit, and issue staff environmental assessments and other CEQA related documents.

2006-2007

California State Parks
Associate Parks & Recreation Specialist – Off Highway Vehicle Division/Prairie City Off-Highway Vehicle Park

Development of resources study to determine watershed and hydrology, soil taxonomy and geology of State park. Lead on assessment and recommendations for watershed remediation and sediment control project. Climate prediction study to determine weather and hydrology patterns of park over a 25-year period. Research analysis for master and general plan update for district off highway vehicle parks.

2005-2006

California State Department of Mental Health
Senior Mental Health Specialist – Program Compliance

Program lead in Fingerprinting Analysis/Criminal Background Checks and Investigations Unit. Coordinated and directed assignments and deadlines for staff. Project lead in development of 2 new database programs used to automate data from fingerprint program and facility investigations. Unit coordinator for compilation, coordination and analysis of sections monthly measures and outcomes report, contributed significantly in eliminating CBC unit backlog. Conducted incident investigations to determine regulatory compliance.

2000-2005

California State Parks
Associate Parks & Recreation Specialist – Grants and Local Services

Administration of park and recreation grants under State and Federal funding to local agencies in over 19 counties statewide and Bureau of Land Management. Provided technical assistance and interpretation of regulations and policy to local agencies, evaluate project status, billing support and documentation, and field inspections to determine compliance with project agreement. Team leader in development of program procedural guides including research of state and federal regulations, assignments coordination and participation at public hearings and coordinated assignments to meet critical deadlines. Development of program regulations and procedural guide, workshop lead.

1998-2009 ***California State Parks***
Personnel Services Specialist – Human Resources
Personnel and salary transaction functions for a roster of +400 district and HQ employees. Personnel contact with DPR employees for the purpose of responding to questions and dispensing accurate information to HQ and field timekeepers and employees. Contact with outside agencies for purpose of salary and payroll interpretation and processing. Translated bargaining unit contractual information to managers and employees and translated reference guidelines for laws and rules as set forth by DPA, SCO and SPB. Developed and initiated HQ new employee orientation and improved sign up procedures.

1997-1998 ***Department of the Youth Authority***
Public Service and Support Division
Analyzed and reconciled monthly reported from facilities and prepared monthly reimbursement claims to exceed $650K. Compiled data, analyzed and prepared intricate spreadsheets for monthly, quarterly and yearly accounting. Responsible for Mac training and support for division. Chair for United Way campaign.

1994-1997 ***Department of Fish and Game***
Office of Oil Spill Response-Scientific Division
Coordinated and prioritized assignments for division and supervised work of support staff. Coordination of interagency efforts as agency liaison during emergency response efforts during a coastline oil spill. Developed Operations Protocol manual for Incident Command Center and emergency response support team. Facilitated public surveys to determine economic value of recreation and natural resources and determine user trends.

1991-1994 ***John F. Kennedy High School***
Office of Oil Spill Response-Scientific Division
Using district graduation and special education requirements; planned, collected, evaluated and analyzed data from a variety of sources to develop a master schedule for educational programs; critical analysis of all phases of student programs to determine eligibility of curriculum prerequisites and high school graduation eligibility; translated high school graduation requirements and policy from district and inter-district transcripts to make curriculum recommendations, conducted curriculum training program to incoming students and parents, supervised team of student assistants. Program lead for targeted youth.

Education/Credentials

- Bachelor of Arts, Cum Laude, Sacramento State University in Communication Studies, concentration in Rhetorical Criticism
- California Real Estate Sales License, September 1999, license current

DECLARATION OF
Testimony of William Walters, P.E.

I, **William Walters,** declare as follows:

1. I am presently employed by Aspen Environmental Group, a contractor to the California Energy Commission, Systems Assessment and Facilities Siting Division, as a senior associate in engineering and physical sciences.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Air Quality** for the **Riverside 3 & 4 Project** based on my independent analysis of the Small Power Plant Exemption and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: November 12, 2008 Signed:

At: Agoura Hills, California

WILLIAM WALTERS, P.E.
Air Quality Specialist

ACADEMIC BACKGROUND
B.S., Chemical Engineering, 1985, Cornell University

PROFESSIONAL EXPERIENCE

Mr. Walters has over 20 years of technical and project management experience in environmental compliance work, including environmental impact reports, emissions inventories, source permitting, energy and pollution control research RCRA/CERCLA site assessment and closure, site inspection, and source monitoring,.

Aspen Environmental Group — 2000 to present

Responsible as lead technical and/or project manager of environmental projects. Specific responsibilities and projects include the following:

- **Engineering and Environmental Technical Assistance to Conduct Application for Certification Review for the California Energy Commission:**
  - Preparation and project management of the air quality section of the Staff Assessment and/or Initial Study and the visual plume assessment for the following California Energy Commission (CEC) licensing projects: Hanford Energy Park; United Golden Gate, Phase I; Huntington Beach Modernization Project (including Expert Witness Testimony); Woodland Generating Station 2; Ocotillo Energy Project, Phase I; Magnolia Power Project; Colusa Power Project; Inland Empire Energy Center; Rio Linda/Elverta Power Plant Project; Roseville Energy Center; Henrietta Peaker Project; Tracy Peaking Power Plant Project (including Expert Witness Testimony); Avenal Energy Project; San Joaquin Valley Energy Center (including expert witness testimony); Salton Sea Unit 6 Project (including expert witness testimony); Modesto Irrigation District Electric Generation Station (including expert witness testimony); Walnut Energy Center (including expert witness testimony); Riverside Energy Resource Center (including expert witness testimony); Pastoria Energy Facility Expansion; Panoche Energy Center; Starwood Power Plant; and Riverside Energy Resource Center Units 3 and 4 Project (in progress).
  - Preparation and project management of the visual plume assessment for the following California Energy Commission (Energy Commission) licensing projects: Metcalf Energy Center Power Project (including Expert Witness Testimony); Contra Costa Power Plant Project (including Expert Witness Testimony); Mountainview Power Project; Potrero Power Plant Project; El Segundo Modernization Project; Morro Bay Power Plant Project; Valero Cogeneration Project; East Altamont Energy Center (including expert witness testimony); Russell City Energy Center; SMUD Cosumnes Power Plant Project (including expert witness testimony); Pico Power Project; Blythe Energy Project Phase II; City of Vernon Malburg Generating Station; San Francisco Electric Reliability Project; Los Esteros Critical Energy Facility Phase II; Roseville Energy Park; City of Vernon Power Plant; South Bay Replacement Project; Walnut Creek Energy Park; Sun Valley Energy Project; Highgrove Power Plant; Colusa Generating Station; Russell City Energy Center; Avenal Energy Project; Carlsbad Energy Center; Community Power Project; Panoche Energy Center; San Gabriel Generating Station; Sentinel Energy Project; and Victorville 2 Hybrid Power Project.
  - Assistance in the aircraft safety review of thermal plume turbulence for the Riverside Energy Resources Center; Russell City Energy Center Amendment (including expert witness testimony); Eastshore Energy Power Plant (including expert witness testimony); Carlsbad Energy Center (in progress), Riverside Energy Resource Center Units 3 and 4 Project; Victorville 2 Hybrid Power Project; and the Blythe Energy Power

Plant and Blythe Energy Project Phase II (including expert witness testimony) siting cases. Assistance in the aircraft safety review of thermal and visual plumes of the operating Blythe Energy Power Plant. Preparation of a white paper on methods for the determination of vertical plume velocity determination for aircraft safety analyses.

- Preparation and instruction of a visual water vapor plume modeling methodology class for the CEC.
- Preparation and project management of the public health section of the Initial Study for the Woodland Generating Station 2 Energy Commission licensing project.
- Preparation of project amendment or project compliance assessments, for air quality or visual plume impacts, for several licensed power plants, including: Metcalf Energy Center; Pastoria Power Plant; Elk Hills Power Plant; Henrietta Peaker Project; Tracy Peaker Project; Magnolia Power Project; Delta Energy Center; SMUD Cosumnes Power Plant; Walnut Energy Center; San Joaquin Valley Energy Center; City of Vernon Malburg Generating Station; Otay Mesa Power Plant; Los Esteros Critical Energy Facility; Pico Power Project; Riverside Energy Resource Center; Blythe Energy Project Phase II; Inland Empire Energy Center; Salton Sea Unit 6 Project; and Starwood Power-Midway Peaking Power Plant.
- Preparation of the air quality section of the staff paper "A Preliminary Environmental Profile of California's Imported Electricity" for the Energy Commission and presentation of the findings before the Commission.
- Preparation of the draft staff paper "Natural Gas Quality: Power Turbine Performance During Heat Content Surge", and presentation of the preliminary findings at the California Air Resources Board Compressed Natural Gas Workshop and a SoCalGas Technical Advisory Committee meeting.
- Preparation of the staff paper "Emission Offsets Availability Issues" and preparation and presentation of the Emission Offsets Constraints Workshop Summary paper for the Energy Commission.
- Preparation of information request and data analysis to update the Energy Commission's Cost of Generation Model capital and operating cost factors for combined and simple cycle gas turbine projects. Additionally, performed a review of the presentation for the revised model as part of the CEC's 2007 Integrated Energy Policy Report workshops, and attended the workshop and answering Commissioner questions on the data collection and data analysis.

- For the **Los Angeles Department of Water and Power (LADWP)**:
  - Preparation of the Air Quality Inventory for the LADWP River Supply Pipeline Project EIR.
  - Project management and preparation of the Air Quality Section for the LADWP Valley Generating Station Stack Removal IS/MND support project.
- For the **U.S. Army Corps of Engineers (Corps)**:
  - Preparation of the Air Quality Section and General Conformity Analysis for the Matilija Dam Ecosystem Restoration Project EIS/R for the Corps.
  - Preparation of emission inventory and General Conformity Analysis of the Murrieta Creek Flood Control Project and the Joint Red Flag exercise to be conducted in the Nevada Test and Training Range.
  - Emission inventory for the construction activities forecast for the San Jose/Old San Jose Creeks Ecosystem Restoration project for the Corps.
- Other Projects:
  - Preparation of the Air Quality Section of the LAUSD New School Construction Program EIR and provided traffic trip and VMT calculation support for the Traffic and Transportation Section.

- Preparation of the draft staff paper "Natural Gas Quality: Power Turbine Performance During Heat Content Surge", and presentation of the preliminary findings at the California Air Resources Board Compressed Natural Gas Workshop and a SoCalGas Technical Advisory Committee meeting.
- Preparation of the Air Quality Section of the Environmental Information Document in support of the Coastal Consistency Determinations for the suspension of operation requests for undeveloped units and leases off the Central California Coast.
- Preparation of comments on the Air Quality, Alternatives, Marine Traffic, Public Safety, and Noise section of the Cabrillo Port Liquefied Natural Gas Deepwater Port Draft EIS/EIR for the City of Oxnard.
- Preparation of the emission estimates used in the Air Quality Sections for the DWR Tehachapi Second Afterbay Project Initial Study and EIR.

Camp Dresser & McKee, Inc. 1998 to 2000

Mr. Walters was responsible as lead technical and/or project manager of environmental projects. Specific responsibilities and projects include the following:

- Preparation of emission inventories and dispersion modeling for criteria and air toxic pollutants for the Los Angeles International Airport Master Plan (LAXMP) EIS/EIR.
- Project Manager/Technical lead for the completion of air permit applications and air compliance audits for two Desa International fireplace accessory manufacturing facilities located in Santa Ana, California.
- Project manager/technical lead for the completion of Risk Management Plans (RMPs) for four J.R. Simplot food processing facilities in Oregon, Idaho, and Washington and the Consolidated Reprographics facility located in Irvine, California.

Planning Consultants Research 1997 to 1998

Mr. Walters was responsible as lead technical and/or project manager of environmental projects. Specific responsibilities and projects include the following:

- Project Manager for a stationary source emission audit of the entire Los Angeles International Airport complex for Los Angeles World Airports (LAWA) in support of the LAXMP.
- Review of the Emission Dispersion Modeling System (EDMS) and preparation of a report with findings to the Federal Aviation Administration for LAWA in support of the LAXMP.
- Project manager for the ambient air monitoring and deposition monitoring studies performed for LAWA in support of the LAXMP, including the selection of the monitoring sites and specialty subcontractor, and review of all monitoring data.

Aspen Environmental Group/Clean Air Solutions 1995 to 1996

Mr. Walters was responsible as lead technical and/or project manager of environmental projects. Specific responsibilities and projects include the following:

- Manager of the Portland, Oregon, office of Clean Air Solutions from March 1995 to December 1995, with responsibilities including Project Management, Business Development, and Administration.
- Control technology assessment, engineering support and Notice of Intent to construct preparation for J.R. Simplot's Hermiston, Oregon, food processing facility. Review and revision of an Air Contaminant Discharge Permit application, Title V permit application, and PSD modeling analysis for J.R. Simplot's Hermiston facility.

- Air quality compliance report including an air emission inventory, regulation and permit compliance determination, and recommendations for compliance for Lumber Tech, Inc.'s Lebanon, Oregon, wood products facility.

Fluor Daniel, Inc. — 1990 to 1995 and 1996 to 1997

Mr. Walters was responsible as lead technical or project manager for major environmental projects for both government and private clients. His projects included:

- Prepared several air permit applications for the ARCO Los Angeles Refinery Polypropylene Plant Project; Phase I environmental assessments for properties located in Southern California; and a site investigation and RCRA closure plan for a hazardous waste storage site in Vernon, California.
- Project manager of the Anaconda Smelter site for the U.S. Environmental Protection Agency's (EPA) Alternative Remedial Contract System (ARCS) project during the conclusion of technical activities and project closeout. Prepared a cost recovery report for the project.
- Performed environmental analysis for the Bonneville Power Authority, including air pollution BACT analysis, wastewater analysis, and evaluation of secondary environmental effects of electric power producing technologies.

Jacobs Engineering Group — 1988 to 1990

Mr. Walters was responsible for a wide range of air pollution regulatory and testing projects, including the following:

- Project manager of air toxic emission inventory reports prepared for U.S. Borax's boron mining and refining facility and the Naval Aviation Depot (N. Island Naval Base, San Diego, California).
- Prepared air permit applications and regulatory correspondence for several facilities including the U.S. Department of Energy's Feed Material Production Center uranium processing facility in Fernald, Ohio; Evaluation of a sludge dewatering process at Unocal's Wilmington, California, Refinery; and United Airlines blade repair facility at the San Francisco Airport.
- Characterized and quantified air emissions for offshore oil and gas development activities associated with Federal oil and gas Lease Sale 95, offshore southern California, for the U.S. Minerals Management Service.

CERTIFICATIONS

- Chemical Engineer, California License 5973
- CARB, Fundamentals of Enforcement Seminar
- EPA Methods 1-8, 17; Training Seminar

AWARDS

- California Energy Commission Outstanding Performance Award 2001

DECLARATION OF
Brian McCollough

I, **Brian McCollough**, declare as follows:

1. I am presently employed by The California Energy Commission in the **Siting, Transmission, and Environmental Protection Division** as a **Planner I**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Biological Resouces,** for the Riverside Energy Resource Center Units 3 & 4 Expansion Project, based on my independent analysis of the Small Power Plant Exemption and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated:________________________ Signed:___Original Signature in Dockets____

At: Sacramento, CA___

Brian McCollough
1516 Ninth Street MS 40
Sacramento, CA 95814-5504
(916) 653-1648   email: bmccollo@energy.state.ca.us

Education

School	Field	Degree	Year
Rice University	Biology	B.A	1998
UC Davis Extension	Land Use & Enviro. Planning	Certificate	2001

Experience

State of California, California Energy Commission *2007 to present*
Planner I, Siting, Transmission, and Environmental Protection Division, Biological Resources Unit,
All tasks related to the production of the biological resources sections of CEQA-equivalent (California Environmental Quality Act) documents for the environmental review of proposed power plants in California, including: Evaluating data in applications; writing data requests to applicants and doing independent research to evaluate the potential for sensitive biological resources subject to significant impacts from proposed projects; providing and receiving information in public hearings on applications; analyzing all pertinent data; writing Staff Assessments of impacts; developing mitigation measures to reduce to insignificant any impacts to biological resources; providing expert testimony on my analyses and findings in public hearings; and reviewing compliance with mitigation measures during the construction, operation, and decommissioning of certified power plants. Additional tasks include: providing prefiling assistance to applicants, reviewing the CEQA documents of sister state agencies; consulting and advising biological resources specialists in sister state agencies; coordinating and reviewing the work of Commission biological resources consultants; and developing internal procedures and guidelines to improve biological resources review of applications.

EDAW, Inc. *2001 to 2003*
Biologist and compliance monitor.
Wrote biological resource sections for projects undergoing environmental permitting review, including researching potential impacts to biological resources that could result from construction of proposed projects, and development of appropriate mitigation measures to reduce those impacts to less-than-significant levels, in consultation with appropriate agencies, local governments, and clients. Monitored projects for compliance with local, state, and federal laws, including compliance with environmental permitting conditions..

Department of Ecology and Evolutionary Biology, Rice University *1994 to 1997*
Research Assistant, Forest Ecology
Assisted with the ongoing research of Dr. Paul Harcombe into the dynamics of several long-term study plots in the forests of the Big Thicket, Texas. Managed field crews, collected, organized, and analyzed data, and designed and conducted a study of lighting conditions in the study plots using scanned hemispherical canopy photos. Also assisted in the installation of local climate stations with data loggers and dendrometer bands on selected trees in an attempt to correlate local climate data to seasonal woody growth so as to model how the forest may respond to potential climate change scenarios.

DECLARATION OF
Dale Rundquist

I**, Dale Rundquist** declare as follows:

1. I am presently employed by the California Energy Commission in the Facilities Siting Office of the Energy Facilities Siting Division as a Compliance Project Manager.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on General Condition for the Riverside Energy Resource Center 3 & 4 based on my independent analysis of the Small Power Plant Exemption and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated:________________________ Signed: Original Signature in Dockets

At: Sacramento, California

DECLARATION OF
Beverly E. Bastian

I, **Beverly E. Bastian**, declare as follows:

1. I am presently employed by The California Energy Commission in the **Siting, Transmission, and Environmental Protection Division** as a **Planner II**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Cultural Resources,** for the Riverside Energy Resource Center Units 3 & 4 Expansion Project, based on my independent analysis of the Small Power Plant Exemption and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated:_________________________ Signed:___Original Signature in Dockets____

At: __Sacramento____________________

Beverly E. Bastian
1516 Ninth Street MS 40
Sacramento, CA 95814-5504
(916) 654-4840 email: bbastian@energy.state.ca.us

Education

School	Field	Degree	Year
University of California, Davis	Anthropology	B.A	1967
University of California, Davis	Anthropology	M.A	1969
Tulane University	Anthropology	A.B.D.	1975
University of Mississippi	American History	(courses only)	1989
University of California, Santa Barbara	Public (American) History and Historic Preservation	A.B.D.	1996

Experience

State of California, California Energy Commission *2005 to present*
Planner II, Facilities Siting Division, Environmental Office, Biological and Cultural Unit,
All tasks related to the production of the cultural resources sections of CEQA-equivalent (California Environmental Quality Act) documents for the environmental review of proposed power plants in California, including: Evaluating data in applications; writing data requests to applicants and doing independent research to compile an inventory of and evaluate the historical/cultural significance of cultural resources subject to significant impacts from proposed projects; providing and receiving information in public hearings on applications; analyzing all pertinent data; writing Staff Assessments of impacts; developing mitigation measures to reduce to insignificant any impacts to significant cultural resources; providing expert testimony on my analyses and findings in public hearings; and reviewing compliance with mitigation measures during the construction, operation, and decommissioning of certified power plants. Additional tasks include: providing prefiling assistance to applicants, reviewing the CEQA documents of sister state agencies; consulting and advising cultural resources specialists in sister state agencies; coordinating and reviewing the work of Commission cultural resources consultants; and developing internal procedures and guidelines to improve cultural resources review of applications.

State of California, Department of Parks and Recreation *2001 to 2005*
Historian I1, Cultural Resources Division, Cultural Resources Support Unit
Conduct major and complex historical and historic architectural investigations and studies dealing with the significance, integrity, and management of historic buildings, structures, and landscapes in California's state parks; participate in interdisciplinary teams and project assignments; prepare technical reports and correspondence; carry out inventories and evaluations of historic properties; coordinate the statewide registration of historical properties; assess the eligibility of historic properties to the National Register of Historic Places and the California Register of Historical Resources; review environmental documents and provide technical analyses of major Departmental projects to determine impacts to cultural resources under State and federal laws; identify resource issues and constraints; establish allowable use and development guidelines; develop approaches to protect, enhance, and perpetuate cultural resources under relevant State and federal laws, regulations, and standards; propose and develop programs, policies, and budgets to meet Department's historic preservation missions.

Department of Sociology and Anthropology, University of Mississippi *1987 to 1989*
Archaeologist, Center for Archaeological Research
All tasks for the completion of the historical archaeological part of a Phase II archaeological survey and testing program final report related to a U. S. Army Corps of Engineers erosion control project in twelve north-central Mississippi counties, including: Coordinating the activities of a field crew and the research

of historians working in archives; setting up an artifact database using survey data to generate statistical summaries for discovered historical archaeological sites; gathering historical settlement and land-use data for twelve counties; conducting a special statistical analysis and synthesis of historical data only, focusing on pre-and post-Civil War land tenure and agricultural production for plantations in two counties where soil fertility contrasted; synthesizing data from all sources, collaborating on the final cultural resources management report with archaeologists specializing in prehistory and survey and sampling methodology; presenting findings at the annual meeting of the Society for Historical Archaeology in 1989.

Gilbert Commonwealth, Inc. *1984 to 1987*
Historical Archaeologist and Project Manager, Environmental Unit
All tasks as Principal Investigator for six major historical archaeological and/or historical architectural cultural resources management projects done under contract to federal, state, and local governments, including: Writing winning proposals for these projects; negotiating and managing project budgets; gathering/supervising the gathering of historical, oral historical, and archaeological data; analyzing/supervising the analysis of gathered data; and writing/supervising the writing of reports of findings, along with the creation of maps, illustrations, and data tables for these reports; serving as the historian and historical preservationist on several multidisciplinary teams tasked with siting the routes for several major power lines in east Texas.

Tennessee Valley Authority *1979 to 1981, 1983-1984*
Land & Economic Resources, Cultural Resources Program (personal services contract)
Historical Archaeologist (self-employed)
All tasks as Principal Investigator for various cultural resources management projects in areas affected by TVA construction, the most significant of which were: the complete excavation of and report on seven nineteenth-century log-cabin sites in Cedar Creek Reservoir in northwestern Alabama; and all historical research, the field work, and the report for the underwater remote-sensing reconnaissance and underwater videotaping of sunken Civil War cargo boats and gunboats at Johnsonville, Tennessee, in the western part of the Tennessee River.

Other Archaeological Projects
1981-1982 Project Director for the field excavation, historical research, data analysis, and report on Fort Independence, South Carolina (dating to the time of the Revolutionary War) for the U. S. Army Corps of Engineers.
1975-1978 Field Director for the total excavation of French-and-Indian-War-period Fort Loudoun in east Tennessee and laboratory supervisor of artifact conservation and analysis for this project at Vanderbilt University for the Tennessee Division of Archaeology.
1974 Archaeologist and Junior Investigator for intensive historical research and archaeological testing at the defunct 19th-century northeastern Alabama river town of Bellefonte, for the Department of Anthropology and Sociology, University of Alabama, Birmingham.
1973 Teaching Assistant for a summer archaeological Field School at historic Fort Southwest Point, dating to the War of 1812, Department of Anthropology, University of Tennessee.
1967 Crew Foreman for a National Park Service-sponsored salvage excavation project along the Delaware riverfront in Philadelphia, for the Department of American Civilization, University of Pennsylvania.
1966 Excavator and a laboratory technician for two California historic sites, Old Sacramento and Old Columbia, for the Department of Anthropology at the University of California, Davis.

Professional Societies

Register of Professional Archaeologists, #10683
Society for Historical Archaeology
National Council on Public History
Vernacular Architecture Forum
Society for California Archeology
California Council for the Promotion of History

DECLARATION OF
Erin Bright

I**, Erin Bright,** declare as follows:

1. I am presently employed by the California Energy Commission in the **Engineering Office** of the Energy Facilities Siting Division as a **Mechanical Engineer**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Energy Resources** for the **Riverside Energy Resource Center Units 3 & 4 Project** based on my independent analysis of the Application, supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 24, 2008 Signed: Original Signature in Dockets

At: Sacramento, California

Erin Bright
Mechanical Engineer

Experience Summary

One year of experience in the electric power generation field, including analysis of noise pollution, construction/licensing of electric generating power plants, and engineering and policy analysis of thermal power plant regulatory issues. One year of experience in the alternative energy field, including analysis of alternative fuel production and use.

Education

- University of California, Davis--Bachelor of Science, Mechanical Engineering and Materials Science
- University of California, Davis Extension Program--Renewable Energy Systems

Professional Experience

2007 to Present-- Mechanical Engineer, Energy Facilities Siting Division - California Energy Commission

Performed analysis of generating capacity, reliability, efficiency, noise, and the mechanical, civil/structural and geotechnical engineering aspects of power plant siting cases.

2006 to 2007--Energy Analyst, Fuels & Transportation Division - California Energy Commission

Performed analysis of use potential and environmental effects of emerging non-petroleum fuels, including compressed natural gas, biomass, hydrogen and electricity, in heavy and light duty transportation vehicles. Contributor to Energy Commission's alternative fuels plan.

DECLARATION OF
Testimony of Michael S. Lindholm, P.G.

I, **Michael S. Lindholm, P.G.,** declare as follows:

1. I am presently employed by Aspen Environmental Group, a contractor to the California Energy Commission, Systems Assessment and Facilities Siting Division, as an engineering geologist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **GEOLOGY AND PALEONTOLOGY** for the **Riverside Energy Resource Center, Units 3 & 4 Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: November 10, 2008 Signed: ______________________

At: Black Eagle Consulting, Inc.
Reno, Nevada

PROFESSIONAL GEOLOGIST
MICHAEL
SCOTT
LINDHOLM
No. 8152
08-31-10
STATE OF CALIFORNIA

11-10-08

Michael S. Lindholm, P.G.
Project Geologist

Education

- B.S. – Geology –1984 – Stephen F. Austin State University
- M.S. – Geology – 1989 – Northern Arizona University

Registrations

- P.G. – California

Experience

2003 to Present: Black Eagle Consulting, Inc.; Project Geologist. Mr. Lindholm maintains over 18 years of geotechnical, mining and construction experience, and has supervised such projects throughout the western United States and South America. As Project Geologist, Mr. Lindholm coordinates and executes field exploration programs of future land development projects, and prepares the subsequent geotechnical reports used for bidding and construction. Additional tasks have included Quaternary fault investigations, liquefaction and slope stability analyses, septic system design, and forensic evaluation and remediation of distressed structures. Prior to his current position on the geotechnical staff, Mr. Lindholm worked in the Quality Control Department, where his duties included inspection, field sampling, and testing of soils, asphalt, and concrete. Over the past 2 years, Mr. Lindholm has assisted the California Energy Commission (CEC) in reviewing geology and paleontology sections of Applications for Certification (AFC) for various power plants throughout the State of California. The power plants included:

Walnut Creek Energy Park	Vernon Power Plant
Humboldt Bay Repowering Project	Bullard Energy Center Project
Victorville 2 Hybrid Power Project	San Gabriel Generating Station
Sentinel Peaker Project	Ivanpah Solar Electric Generating Station

2000 and 2002: AMEC Infrastructure. Mr. Lindholm was project inspector and tester during the construction of large-scale transportation and infrastructure projects. Additional experience includes inspection of traffic control, testing and inspection of concrete flatwork and structures, utility installation, and rockfall containment systems.

June 1989 to October 1999. Mr. Lindholm was an exploration and mine geologist for the minerals industry, during which time he worked to discover, explore and develop precious and base metal deposits in the western U.S. and overseas. He acquired extensive experience with geologic mapping, project drilling, geologic modeling, resource estimation, and database management.

Affiliations

- Geological Society of Nevada
- Treasurer – Association of Environmental & Engineering Geologists, Great Basin Chapter

Publications

Lindholm, M.S., 1991, "Evolution of the major structure that controls massive sulfide distribution at Jerome, Arizona," *in* Preoterozoic Geology and Ore Deposits of Arizona, Arizona Geological Society Digest 19, p. 261-270.

DECLARATION OF
Alvin J. Greenberg, Ph.D.

I, Alvin J. Greenberg, Ph.D. declare as follows:

1. I am presently a consultant to the California Energy Commission, Energy Facilities Siting and Environmental Protection Division.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on the **Hazardous Materials Management, and Worker Safety/Fire Protection** section for the **Riverside Energy Resource Center Units 3 & 4 SPPE Application** based on my independent analysis of the amendment petition, supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: Nov. 10, 2008 Signed:

At: Sacramento, California

Risk Science Associates

121 Paul Dr., Suite A, San Rafael, Ca. 94903-2047
415-479-7560   fax 415-479-7563
e-mail   agreenberg@risksci.com

Name & Title: **Alvin J. Greenberg, Ph.D., FAIC, REA, QEP**
Principal Toxicologist

Dr. Greenberg has had over two decades of complete technical and administrative responsibility as a team leader for hazardous waste site characterization, preparation of human and ecological risk assessments, air quality assessments, interaction with regulatory agencies in obtaining permits, hazardous materials handling and risk management prevention, infrastructure vulnerability assessments, conducting lead surveys and studies, with particular expertise in the assessment of dioxins, lead, diesel exhaust, petroleum hydrocarbons, mercury, and the intrusion of subsurface contaminants into indoor air. Dr. Greenberg's expertise in risk assessment has led to his appointment as a member of several state and federal advisory committees, including the California EPA Advisory Committee on Stochastic Risk Assessment Methods, the US EPA Workgroup on Cumulative Risk Assessment, the Cal/EPA Peer Review Committee of the Health Risks of Using Ethanol in Reformulated Gasoline, the California Air Resources Board Advisory Committee on Diesel Emissions, the Cal/EPA Department of Toxic Substances Control Program Review Committee, and the DTSC Integrated Site Mitigation Committee. Dr. Greenberg is the former Chair of the Bay Area Air Quality Management District Hearing Board, a former member of the State of California Occupational Health and Safety Standards Board (appointed by the Governor), and former Assistant Deputy Chief for Health, California OSHA. And, since the events of 9/11, Dr. Greenberg has been the lead person for developing vulnerability assessments, power plant security programs, and conducting safety and security audits of power plants for the California Energy Commission. In addition to providing security expertise to the State of California, Dr. Greenberg is Team Leader and main consultant to the State of Hawaii on the updating of their Energy Emergency Preparedness Plan.

Years Experience: 25

Education:

B.S. 1969 Chemistry, University of Illinois Urbana

Ph.D. 1976 Pharmaceutical/Medicinal Chemistry, University of California, San Francisco

Postdoctoral Fellowship 1976-1979 Pharmacology/Toxicology, University of California, San Francisco

Postgraduate Training 1980 Inhalation Toxicology, Lovelace Inhalation Toxicology Research Institute, Albuquerque, NM

Professional Registrations:

Board Certified as a Qualified Environmental Professional (QEP)
California Registered Environmental Assessor - I (REA)
Fellow of the American Institute of Chemists (FAIC)

Professional Affiliations:

Society for Risk Analysis
Air and Waste Management Association
American Chemical Society
American Association for the Advancement of Science
National Fire Protection Association

Technical Boards and Committee Memberships - Present:

Squaw Valley Technical Review Committee
(appointed 1986)

Technical Boards and Committee Memberships - Past:

July 1996 – March 2002
Member, Bay Area Air Quality Management District Hearing Board
(Chairman 1999-2002)

September 2000 – February 2001
Member, State Water Resources Control Board Noncompliant Underground Tanks Advisory Group

January 1999 – June 2001
Member, California Air Resources Board Advisory Committee on Diesel Emissions

January 1994 - September 1999
Vice-Chairman, State Water Resources Control Board Bay Protection and Toxic Cleanup Program Advisory Committee

September 1998
Member, US EPA Workgroup on Cumulative Risk Assessment

April 1997 - September 1997
Member, Cal/EPA Private Site Manager Advisory Committee

January 1986 - July 1996
Member, Bay Area Air Quality Management District Advisory Council
(Chairman 1995-96)

January 1988 - June 1995
Member: California Department of Toxic Substance Control Site Mitigation Program Advisory Group

January 1989 - February 1995
Member: Department of Toxics Substances Control Review Committee, Cal-EPA

October 1991 - February 1992
Chair: Pollution Prevention and Waste Management Planning Task Force of the Department of Toxics Substances Control Review Committee, Cal-EPA

September 1990 - February 1991
Member: California Integrated Waste Management Board Sludge Advisory Committee

September 1987 - September 1988
ABAG Advisory Committee on Regional Hazardous Waste Management Plan

March 1987 - September 1987
California Department of Health Services Advisory Committee on County and Regional Hazardous Waste Management Plans

January 1984 - October 1987
Member, San Francisco Hazardous Materials Advisory Committee

March 1984 - March 1987
Member, Lawrence Hall of Science Toxic Substances and Hazardous Materials Education Project Advisory Board

Jan. 1, 1986 - June 1, 1986
Member, Solid Waste Advisory Committee, Governor's Task Force on Hazardous Waste

Jan. 1, 1983 - June 30, 1985
Member, Contra Costa County Hazardous Waste Task Force

Sept. 1, 1982 - Feb. 1, 1983
Member, Scientific Panel to Address Public Health Concerns of Delta Water Supplies, California Department of Water Resources

Present Position

January 1983- present
Owner and principal with Risk Sciences Associates, a Marin County, California, environmental consulting company specializing in multi-media human health and ecological risk assessment, air pathway analyses, hazardous materials management-infrastructure security, environmental site assessments, and litigation support for toxic substance exposure cases.

Previous Positions

Jan. 2, 1983 - June 12, 1984
Member, State of California Occupational Safety and Health Standards Board (Cal/OSHA), appointed by the Governor

Aug. 1, 1979 - Jan. 2, 1983
Assistant Deputy Chief for Health, California Occupational Safety and Health Administration

Feb. 1, 1979 - Aug. 1, 1979
Administrative Assistant to Chairperson of Finance Committee, Board of Supervisors, San Francisco

Jan. 1, 1976 - Feb. 1, 1979

Research Pharmacologist and Postdoctoral Fellow, Department of Pharmacology and Toxicology, School of Medicine, University of California, San Francisco

Jan. 1, 1975 - Dec. 31, 1975

Acting Assistant Professor, Department of Pharmaceutical Chemistry, University of California, San Francisco

Experience

General

Dr. Greenberg has been a consultant in Human and Ecological Risk Assessment, Occupational Health, Toxicology, Hazardous Materials Management and Security, Hazardous Waste Site Characterization and Toxic Substances Control Policy for over 25 years. He has broad experience in the identification, evaluation and control of health and environmental hazards due to exposure to toxic substances. His experience includes Community Relations Support and Risk Communication through experience at high-profile sites and presentations at professional society meetings.

He has considerable experience in the review and evaluation of exposure via the air pathway - particularly to emissions from power plants and diesel exhaust - and a thorough knowledge of the regulatory requirements through his experience at Cal/OSHA, the BAAQMD Hearing Board, as a consultant to the California Energy Commission, and in preparing such assessments for local government and industry. He has assessed exposures to diesel exhaust during construction and operations of stationary and mobile sources and has testified at evidentiary hearings numerous times on this subject.

He served for over five years as the Vice-chair of the California State Water Resources Control Board Advisory Committee convened to address toxic substances in sediments in bays, rivers, and estuaries. He has also conducted numerous ecological risk assessments and characterizations, including those for marine and terrestrial habitats.

Since the events of 9/11, Dr. Greenberg has taken the lead for the California Energy Commission in developing a power plant vulnerability assessment methodology and model power plant security plan. He also assisted the CEC in the preparation of a “background” report on the risks and hazards of siting LNG terminals in California and consulted for the City of Vallejo on a proposed LNG terminal and storage facility at the former Mare Island Naval Shipyard. In August 2004, a team of experts led by Dr. Greenberg was awarded an 18-month contract by the State of Hawaii to update and improve the state’s Energy Emergency Preparedness Plan and make recommendations for increased security of critical energy infrastructure on this isolated group of islands.

Dr. Greenberg has extensive experience in data collection and preparation of human and ecological risk assessments on numerous military bases and industrial sites with Cal/EPA DTSC and RWQCB oversight. He has also been retained to provide technical services to the Cal/EPA Department of Toxic Substances Control (preparation of human health risk assessments) and the

Office of Environmental Health Hazard Assessment (review and evaluation of air toxics health risk assessments and preparation of profiles describing the acute and chronic toxicity of toxic air contaminants). He has also conducted several surveys of sites containing significant lead contamination from various sources including lead-based paint, evaluated potential occupational exposure to lead dust and fumes in industrial settings, prepared numerous human health risk assessments of lead exposure, and prepared safety and health plans for remedial investigation of lead oxide contaminated soil at DOD facilities.

Dr. Greenberg is also a recognized expert on the requirements of California's Proposition 65 and has served as an expert on Prop. 65 litigation.

DECLARATION OF
RICK TYLER

I, Rick Tyler, declare as follows:

1. I am presently employed by the California Energy Commission in the Facilities Siting, Office of the Energy Facilities Siting and Environmental Protection Division as a Senior Mechanical Engineer.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **HAZARDOUS MATERIALS MANAGEMENT** for the **RIVERSIDE ENERGY RESOURCE CENTER UNITS 3 & 4,** based on my independent analysis of the Small Power Plant Exemption and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated:__________________________ Signed:___Original Signature in Dockets____

At: __Sacramento, California

RICK TYLER

Associate Mechanical Engineer

CALIFORNIA ENERGY COMMISSION

EDUCATION B.S., Mechanical Engineering, California State University, Sacramento. Extra course work in Statistics, Instrumentation, Technical Writing, Management; Toxicology, Risk Assessment, Environmental Chemistry, Hazardous Materials Management, Noise Measurement, and regulations regarding control of toxic substances.

Near completion of course work necessary to obtain a certificate in hazardous materials management from University of California, Davis.

EXPERIENCE

Jan. 1998-
Present

California Energy Commission - Senior Mechanical Engineer
Energy Facility Siting and Environmental Protection Division

Responsible for review of Applications for Certification (applications for permitting) for large power plants including the review of handling practices associated with the use of hazardous and acutely hazardous materials, loss prevention, safety management practices, design of engineered equipment and safety systems associated with equipment involving hazardous materials use, evaluation of the potential for impacts associated with accidental releases and preparation and presentation of expert witness testimony and conditions of certification. Review of compliance submittals regarding conditions of certifications for hazardous materials handling, including Risk Management Plans Process Safety Management.

April 1985-
Jan. 1998

California Energy Commission - Health and Safety
Program Specialist; Energy Facility Siting and Environmental Protection Division.

Responsible for review of Public Health Risk Assessments, air quality, noise, industrial safety, and hazardous materials handling of Environmental Impact Reports on large power generating and waste to energy facilities, evaluation of health effects data related to toxic substances, development of recommendations regarding safe levels of exposure, effectiveness of measures to control criteria and non-criteria pollutants, emission factors, multimedia exposure models. Preparation of testimony providing Staff's position regarding public health, noise, industrial safety, hazardous materials handling, and air quality issues associated with proposed power plants. Advise Commissioners, Management, other Staff and the public regarding issues related to health risk assessment of hazardous materials handling.

Nov. 1977- April 1985	California Air Resources Board - Engineer (last 4 years Associate level) Responsible for testing to determine pollution emission levels at major industrial facilities; including planning, supervision of field personnel, report preparation and case development for litigation; evaluate, select and acceptance-test instruments prior to purchase; design of instrumentation systems and oversight of their repair and maintenance; conduct inspections of industrial facilities to determine compliance with applicable pollution control regulations; improved quality assurance measures; selected and programmed a computer system to automate data collection and reduction; developed regulatory procedures and the instrument system necessary to certify and audit independent testing companies; prepared regulatory proposals and other presentations to classes at professional symposia and directly to the Air Resources Board at public hearings. As state representative, coordinated efforts with federal, local, and industrial representatives.
<u>PROFESSIONAL AFFILIATIONS/ LICENSES</u>	Past President, Professional Engineers in California Government Fort Sutter Section; Past Chairman, Legislative Committee for Professional Association of Air Quality Specialists. Have passed the Engineer in Training exam.
<u>PUBLICATIONS, PROFESSIONAL PRESINTATIONS AND ACCOMPLISHMENTS</u>	Authored staff reports published by the California Air Resources Board and presented papers regarding continuous emission monitoring at symposiums. Authored a paper entitled "A Comprehensive Approach to Health Risk Assessment", presented at the New York Conference on Solid Waste Management and Materials Policy. Authored a paper entitled "Risk Assessment A Tool For Decision Makers" at the Association of Environmental Professionals AEP Conference on Public Policy and Environmental Challenges. Conducted a seminar at University of California, Los Angeles for the Doctoral programs in Environmental Science and Public Health on the subject of "Health Risk Assessment". Authored a paper entitled "Uncertainty Analysis -An Essential Component of Health Risk Assessment and Risk Management" presented at the EPA/ORNL expert workshop on Risk Assessment for Municipal Waste Combustion: Deposition, Uncertainty, and Research Needs. Presented a talk on off-site consequence analysis for extremely hazardous materials releases. Presented at the workshop for administering agencies conducted by the City of Los Angeles Fire Department. Evaluated, provided analysis and testimony regarding public health and hazardous materials management issues associated with the permitting of more than 20 major power plants throughout California.

Developed Departmental policy, prepared policy documents, regulations, staff instruction, and other guidance documents and reference materials for use in evaluation of public health and hazardous materials management aspects of proposed power plants.

Project Manager on contracts totaling more than $500,000.

RES.RT

DECLARATION OF
Amanda Stennick

I, **Amanda Stennick** declare as follows:

1. I am presently employed by the California Energy Commission in the Facilities Siting Office of the Energy Facilities Siting Division as a Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on Land Use for the Riverside Energy Resource Center 3 & 4 based on my independent analysis of the Small Power Plant Exemption and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated:__________________________ Signed: Original Signature in Dockets

At: Sacramento, California

AMANDA STENNICK

EDUCATION

B.A. 1986 University of California, Davis, Urban and Economic Geography

WORK EXPERIENCE

April 1998
present

Planner II. California Energy Commission, Energy Facilities Siting and Protection Division.

Provide technical analysis of proposed energy planning, conservation, and development programs on land use and socioeconomic resources. Specific tasks include the analysis of potential land use and socioeconomic impacts, identification of mitigation measures, presentation of oral and written testimony for hearings on siting cases, and project monitoring to ensure compliance with local, state and federal environmental laws and regulations. Recent work includes preparation of agenda and other materials for staff's environmental justice training seminar; research in the areas of demographics and poverty for environmental justice in siting cases; review of environmental justice legislation; research on energy and environmental justice issues specific to US/Mexico Border; as part of a team, authored the 2000 Quality Control Responsibilities for Division Products; authored the Environmental Justice sections for the 2001, 2003, and 2005 Environmental Performance Report; technical lead for land use section for 2005 Environmental Performance Report; CEQA review and comment on Cabrillo LNG Deepwater Port Facility NOI/NOP, City of Pittsburg Trans Bay Cable Project, and EIS/EIR for LNG facility in the Port of Long Beach.

Oct. 1993
to April 1998

Planner I. California Energy Commission, Energy Facilities Siting and Protection Division.

Provide technical analysis of proposed energy planning, conservation, and development programs on land use and socioeconomic resources. Specific tasks include the analysis of potential impacts, identification of mitigation measures, presentation of oral and written testimony for public hearings on siting cases, and project monitoring to ensure compliance with local, state and federal environmental laws and regulations. Other work includes participation in the environmental justice task force; preparation of environmental justice white paper presented to Commissioners; research and preparation of discussion on discount rates and net present value for the SFEC siting project; preparation of socioeconomic section on 1996 Quincy Library Group Report; preparation of forestry section on 1997 CEC Global Climate Change Report; demographic research for environmental justice issues in siting cases.

1992 to 1993 **Project Manager/Environmental Analyst/Planner.** Beak Consultants.

Environmental Planner for EIR/EA for the Mammoth County Water District. Analyzed potential impacts resulting from lake water transfers and maintenance of in-stream flows in the Mammoth Lakes Basin; prepared land use, socioeconomics, recreation, and public services and utilities sections of EIR/EA; provided team project management.

Environmental Planner for an Effluent Treatment Plant EIR for Simpson Paper Company in Humboldt County. Authored land use, socioeconomics, recreation, public services and utilities, cumulative impacts sections, and mitigation monitoring; provided team project management.

Environmental Planner for Folsom/SAFCA Reoperation. Work involved determining parameters of project description with respect to water modeling, project geographic boundaries, and agency jurisdictional boundaries; ensured compliance with federal, state, and local plans and policies; provided team project management.

1990 to 1992 **Environmental Analyst/Project Manager.** ECOS. Inc.

Project Manager/Planner. EIR for a Planned Development, General Plan Amendment, and rezone request for a 504-acre Business and Industrial Park expansion for the Port of Sacramento. Prepared work scope and budget for Public Improvements Plan and Specific Plan for an 80-acre Mixed Use/Water Related development, including a Mitigation Monitoring Plan and Statement of Overriding Considerations for the City of West Sacramento. Specific tasks included coordination with subcontractors on technical sections of EIR, meetings with Assistant Port Director and City staff to present Public Improvements Plan, Specific Plan, tentative parcel map, and critical project phasing; and discussion with CDFG and Port staff on regional approach to mitigation for project-impacted endangered species.

Project Manager/ Planner. EIR for the Wildhorse Residential/Recreational Planned Development for the City of Davis. Specific tasks included CEQA compliance, writing technical sections on land use, project alternatives, and cumulative impacts, and determining appropriate project alternatives based on traffic models and allowable housing densities.

Project Manager. Yolo County Powerline Ordinance. Project tasks included developing siting policies and mitigation measures for placement of powerlines and substations in Yolo County.

1989 to 1990	**Assistant Planner.** Sacramento County Planning Department.	
		Principal Author. Energy Component of the Public Services and Facilities Element of the Sacramento County General Plan. Coordinated work efforts with the CEC, SMUD, and PG&E to develop environmental and siting policies for energy facilities and transmission lines; identified environmental impacts and appropriate mitigation measures.
1987 to 1989	**Planner/Assistant Planner.** Yolo County Community Development	
		Planning liaison for Homestake Mining Company's McLaughlin Mine. Conducted meetings on the Technical Review Panel's environmental monitoring of HMC's McLaughlin Mine; prepared staff reports on the implementation of use permit phasing on water quality and impacts of the tailings pond on biologic resources; organized site visits to monitor the revegetation plan and other mitigation measures as specified in the use permit; presented oral and written staff reports to the Planning Commission.
1988	**Consultant.** Pan Pacific Energy Development Corporation.	
		Consulting job to develop a regional energy plan for rural areas of developing countries including decentralized non-fossil fuel power plants in agricultural regions. Attended IREC and AWEA International Conference in Honolulu.

PROFESSIONAL AND CONTINUING EDUCATION

1988	California Environmental Quality Act (UC Davis)
1989	Subdivision Map Act (UC Davis)
1991	Fiscal Impact Analysis (UC Davis)
1994	APA Conference (San Francisco)
1994	Environmental Justice Conference (UC Berkeley)
1998	California Environmental Quality Act (California Energy Commission)
1999	Roundtable on Environmental Justice US/Mexico Border
2000	Local Agency Formation Commission - LAFCO (UC Davis)
2005	Geographic Information System – GIS (UC Davis)
2006	Mapping Your Community GIS and Community Analysis (Sacramento, CA)

PROFESSIONAL AFFILIATIONS

Association of Environmental Professionals
American Planning Association

DECLARATION OF
Steve Baker

I**, Steve Baker,** declare as follows:

1. I am presently employed by the California Energy Commission in the **Engineering Office** of the Siting, Transmission and Environmental Protection Division as a **Senior Mechanical Engineer**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Noise and Vibration** and supervised preparation of the staff testimony on Energy Resources for the **Riverside Energy Resource Center Units 3 & 4 Project** based on my independent analysis of the Application, supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: ________________ Signed: Original Signature in Dockets

At: Sacramento, California

STEVE BAKER, P.E.
Senior Mechanical Engineer

Experience Summary

Thirty-two years experience in the electric power generation field, including mechanical design, QA/QC, construction/startup and business development/licensing of nuclear, coal-fired, hydroelectric, geothermal and windpower plants; and engineering and policy analysis of thermal power plant regulatory issues.

Education

- California State University, Long Beach--Master of Business Administration
- California State Polytechnic University, Pomona--Bachelor of Science, Mechanical Engineering
- Registered Professional Engineer (Mechanical), California —
  No. M27737 expires 6/30/06

Professional Experience

1990 to Present--Senior Mechanical Engineer, Facilities Siting Division - California Energy Commission

Technical lead person for the analysis of generating capacity, reliability, efficiency, noise, geology, paleontology and the mechanical, civil/structural and geotechnical engineering aspects of power plant siting cases. Key contributor to Commission's investigation into market impediments to the deployment of advanced high-efficiency generating technologies.

1987 to 1990--Generation Systems/Facility Design Unit Supervisor, Siting & Environmental Division - California Energy Commission

Responsible for supervising the analysis of generating capacity, reliability, efficiency, safety, and mechanical, civil/structural, and geotechnical engineering aspects of power plant siting cases.

1981-1986--Operations Manager, Alternate Energy - Santa Fe Pacific Realty Corporation

Participated in and supervised identification, evaluation and feasibility analysis, licensing and permitting of hydroelectric, geothermal, windpower and biomass power projects.

1974-1981--Mechanical Engineer, Quality Engineer - Bechtel Power Corporation and Bechtel National, Inc.

Wrote equipment specifications, drew flow diagrams and P&ID's, performed system design and safety analysis for nuclear power plants and nuclear fuel processing plant. Wrote and implemented QA/QC procedures for nuclear power plant. Participated in construction/startup of large coal-fired power plant.

DECLARATION OF
Dr. Obed Odoemelam

I, **Obed Odoemelam**, declare as follows:

1. I am presently employed by the California Energy Commission in the **Siting, Transmission, and Environmental Protection Division** as a **Staff Toxicologist**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Public Health,** for the Riverside Energy Resource Center Units 3 & 4 Expansion Project, based on my independent analysis of the Small Power Plant Exemption and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated:________________________ Signed:___Original Signature in Dockets____

At: __Sacramento___________________

DECLARATION OF
Dr. Obed Odoemelam

I, **Obed Odoemelam**, declare as follows:

1. I am presently employed by the California Energy Commission in the **Siting, Transmission, and Environmental Protection Division** as a **Staff Toxicologist**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Transmission Line Safety and Nuisance,** for the Riverside Energy Resource Center Units 3 & 4 Expansion Project, based on my independent analysis of the Small Power Plant Exemption and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated:_________________________ Signed:___Original Signature in Dockets____

At: __Sacramento____________________

RESUME

DR. OBED ODOEMELAM

EDUCATION:

1979-1981 University of California, Davis, California. Ph.D., Ecotoxicology

1976-1978 University of Wisconsin, Eau Claire, Wisconsin. M.S., Biology.

1972-1976 University of Wisconsin, Eau Claire, Wisconsin. B.S., Biology

EXPERIENCE:

1989
The Present: California Energy Commission. Staff Toxicologist.

Responsible for the technical oversight of staffs from all Divisions in the Commission as well as outside consultants or University researchers who manage or conduct multi-disciplinary research in support of Commission programs. Research is in the following program areas: Energy conservation-related indoor pollution, power plant-related outdoor pollution, power plant-related waste management, alternative fuels-related health effects, waste water treatment, and the health effects of electromagnetic fields. Serve as scientific adviser to Commissioners and Commission staff on issues related to energy conservation. Serve on statewide advisory panels on issues related to multiple chemical sensitivity, ventilation standards, electromagnetic field regulation, health risk assessment, and outdoor pollution control technology. Testify as an expert witness at Commission hearings and before the California legislature on health issues related to energy development and conservation. Review research proposals and findings for policy implications, interact with federal and state agencies and industry on the establishment of exposure limits for environmental pollutants, and prepare reports for publication.

1985-1989 California Energy Commission.

Responsible for assessing the potential impacts of criteria and noncriteria pollutants and hazardous wastes associated with the construction, operation and decommissioning of specific power plant projects. Testified before the Commission in the power plant certification process, and interacted with federal and state agencies on the establishment of environmental limits for air and water pollutants.

1983-1985 California Department of Food and Agriculture.

Environmental Health Specialist.

Evaluated pesticide registration data regarding the health and environmental effects of agricultural chemicals. Prepared reports for public information in connection with the eradication of specific agricultural pests in California.

DECLARATION OF
Joseph Diamond, Ph. D.

I, Joseph Diamond, declare as follows:

1. I am presently employed by the California Energy Commission as a Planner II-Economist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on Socioeconomics for the Riverside Energy Resource Center Units 3&4 (RERC) based on my analysis of the Small Power Plant Exemption and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated:______________ Signed:___Original Signature in Dockets____

At: Sacramento, California

Joseph Diamond Ph. D.
Work:(916)654-3877

Ph.D. with experience in economic policy.

BUSINESS AFFILIATION

California Energy Commission
1516 9th St. MS-40
Sacramento, CA 95814

EDUCATION

Michigan State University	Ph.D.	Resource Development
University of Rhode Island	M.A.	Economics
University of New Hampshire	B.A.	Economics

DECLARATION OF

I, Casey Weaver, declare as follows:

1. I am presently employed by the California Energy Commission in the Facilities Siting Office of the Systems Assessments and Facilities Siting Division as an Engineering Geologist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Soil/Water** for the Riverside Energy Resource Center Units 3 & 4 project based on my independent analysis of the Application for Small Power Plant Exemption and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated:______________ Signed:___Original Signature in Dockets____

At: Sacramento, California

QUALIFICATIONS

CASEY W. WEAVER, RG, CEG

SUMMARY OF EXPERIENCE:

Certified Engineering Geologist with over 20 years of environmental and geotechnical consulting experience. Experience includes remedial investigations and feasibility studies (RI/FS), groundwater investigations, corrective action plans, landfill studies (SWATs, siting, closure), preliminary environmental site assessments (PESA, Phase I), regulatory compliance (RCRA/CERCLA), geotechnical investigation/evaluation, geologic hazard evaluations, active fault evaluations, seismic studies, landslide evaluation/repair, foundation suitability studies, personnel management and business development.

EDUCATION:

B.S. Geology, Humboldt State University, Arcata, CA, 1981
University of California, Davis Extension Courses

REGISTRATIONS/LICENCES/CERTIFICATIONS:

Certified Engineering Geologist, California
Registered Geologist, California, Oregon, Arizona
Registered Environmental Assessor
OSHA 1910.120 Hazardous Waste Operations and Emergency Response - 40hr
OSHA 1910.120 Hazardous Waste Operations and Emergency Response -Supervising Operations at Hazardous Waste Sites.

PROFESSIONAL HISTORY:

2008 to Present — **Engineering Geologist**
California Energy Commission, Sacramento, CA

Duties within the Water and Soils Unit of the Environmental Office in the Facilities Siting Division include review and evaluation of applications for certification of thermal power plants within the state of California. The focus of the work is on sensitive project sites that may have issues involving groundwater and surface water resources, soil erosion, flooding potential, water quality and plant-derived waste generation and disposal. In addition, evaluate construction, operation and maintenance of the facilities and conduct investigations to determine if violations of the program's regulations, the Energy Commission's conditions of certification, or the California Environmental Quality Act (CEQA) have occurred.

2001 to 2008	**Engineering Geologist** *State Water Resources Control Board, Headquarters, Sacramento, CA*

With the UST Enforcement Unit, under direction from the State Attorney General's Office, conducted inspections of UST systems to evaluate compliance with 1998 upgrade requirements. This work culminated in the largest settlement of its kind in the nation's history. In addition, conducted surveillance of unlawful discharges from remediation systems and conducted investigations of UST Fund fraud cases.

With the USTCF Technical Review Unit, evaluated the technical elements of USTCF claims.

With the Division of Financial Assistance, assisted with the development of program policy for the Agricultural Water Quality Grant Program ($46 million) and the Integrated Water Quality Grant Program ($380 million), participated in stakeholder workshops, contributed to multijurisdictional work groups for program development and implementation.

With the Office of Enforcement, conducted investigations of operator misconduct, wrote enforcement investigation reports and prepared disciplinary letters.

1998 to 2001	**Senior Engineering Geologist** *BSK & Associates, Rancho Cordova, CA*

Designed and directed hydrogeologic investigations for use with environmental remediation projects. Supervised field personnel installing groundwater monitoring wells, conducting aquifer tests & SVE pilot tests, reviewed reports and workplans, and conducted business development.

Conducted review of Alquist-Priolo active fault hazard reports as county geologist for Kern County.

1993 to 1998	**Senior Geologist, Geoscience Team Leader and RI/FS Task Leader** *LAW Engineering and Environmental Services, Inc., Sacramento, CA*

As Geoscience Team Leader, responsible for career development, training and personnel management of ten employees. This group consisted of 3 senior-level geologists, 4 project level geologists and scientists, 2 junior level geologists and 1 technician.

As RI/FS Task Leader, responsible for the development of cost estimates/budgets, preparation of Work Plans and Sampling and Analysis Plans, management of field activities, data collection and documentation associated with the investigation of 15 Installation Restoration Program sites at Beale Air Force Base awarded under several Delivery Orders with combined project budgets of $18 million. Also responsible for aerial photographic interpretations associated with a basewide (23,000 acres), Preliminary Assessment, and preparation of a basewide Hydrogeologic Evaluation Report.

1990 to 1993

Senior Project Manger/General Manager
Earthtec, Ltd., Roseville, CA

Management of Environmental Department, business development, preparation of cost estimates and proposals, client and regulatory agency interface, supervision and training, report writing, technical review, budget management, and quality control. Initiated and supported the development of company's wetland and wildlife departments. Typical projects included preliminary sire assessments, soil vapor studies, detailed hydrogeologic evaluations, waste plume delineations, and development of remediation alternatives associated with landfills, service stations, bulk oil facilities and other potentially contaminated sites.

1981 to 1990

Project Geologist
SHN Group, Inc. Eureka, CA

Managed project work directed toward solving environmental issues at variably contaminated sites and provided geotechnical information for land development and construction. Responsibilities included development of cost estimates/budgets, planned and supervised field operations, collected and interpreted subsurface information, evaluated areas traversed by Alquist-Priolo Special Studies Zones and sites subject to slope stability hazards. Typical projects included geotechnical evaluations and geologic hazard studies for major subdivisions, hospitals, schools, lumber companies, run-of-the-river hydroelectric projects, underground storage tank sites, and solid waste landfills.

1979 to 1981

Geologist/Seismologic Technician
Woodward-Clyde Consultants, San Francisco, CA

Designed and operated a laboratory model to study surface effects of thrust faulting in connection with seismic evaluation studies for the PG&E Humboldt Bay nuclear reactor. In addition, installed and operated field seismographs in the Humboldt Bay region.

DECLARATION OF
James Adams

I, James Adams, declare as follows:

1. I am presently employed by the California Energy Commission in the Siting, Transmission, and Environmental Protection Division as a Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Traffic and Transportation** for the Riverside Energy Resource Center Units 3 & 4 project based on my independent analysis of the Small Power Plant Exemption and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: ___________________ Signed: ___Original Signature in Dockets____

At: Sacramento, California

James S. Adams, M.A.
Environmental Protection Office
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5504
PH (916) 653-0702, FAX (916) 651-8868
jadams@energy.state.ca.us

5/1999
Present **Environmental Planner**

Review applications for certification to acquire permits from the California Energy Commission to build electric generating power plants. Specific technical fields include socioeconomics, traffic and transportation, land use and visual resources. Work on special projects as requested.

11/1997
Present **Energy and Resource Consultant**

Provide clients with technical expertise on various issues related to natural resource use and development. Current activities include managing an intervention by the Surfrider Foundation before the California Public Utilities Commission regarding decommissioning issues concerning Humboldt Bay, Diablo Canyon and San Onofre nuclear reactors.

9/1994--
10/1997 **Senior Analyst - Safe Energy Communication Council (SECC)**

Responsible for developing and/or implementing campaigns on various energy issues involving the promotion of energy efficiency and renewable energy and advocating less reliance on nuclear power. Managed educational outreach efforts to newspaper editorial writers throughout the U.S. to encourage coverage of energy issues. Participated in meetings and negotiations with key Clinton administration officials, members of Congress and staff, national coalitions, and grassroots organizations on important energy issues (e.g. U.S. Department of Energy Budget for Fiscal Years 1996-1998). Successfully raised $140,000 from private foundations to support SECC activities.

6/1978--
12/1992 **Principal Consultant - Redwood Alliance**

Provided consulting services to the Alliance; a renewable energy/political advocacy organization. Major responsibilities included managing and/or participating in several interventions/appearances before the California Public Utilities Commission, California Energy Commission, California Legislature, U.S. Congress and the U.S. Nuclear Regulatory Commission. Issues included electric utility planning options, greater reliance on energy efficiency and renewable energy, nuclear power economic analyses, decommissioning cost estimates, and nuclear waste management and disposal.

2/1983--
8/1986 **Natural Resource Specialist**
Assisted private consulting, firms, non-profit corporations and government agencies in various projects related to the enhancement and protection of national forests in Northern California and Southern Oregon. This included contracts with the U.S. Forest Service, Fish and Wildlife Service, National Park Service, the California Coastal Conservancy, and private landowners.

6/1978--
present Consultant/Journalist/Paralegal/Lobbyist
Throughout the period of work outlined above, I have written a considerable amount of news articles and reports connected to ongoing-projects and issues of personal interest. The leg, al/administrative interventions have required extensive paralegal work to support attorneys, and technical expertise to identify and assist consultants. In addition, many of the projects required consulting services and lobbying, at the local, state and federal level whenever necessary, as well as working with the print and television media as appropriate.

From 1978 through 1984 1 served on the Board of Directors for two locals non-profit agencies devoted to sustainable community development, Redwood Community Development Council and Redwood Community Action Agency (RCAA). I also was hired on staff at RCAA as a natural resource specialist which is explained more fully above. I am proficient with computers, printers, fax machines and related equipment.

EDUCATION

M.A. Social Science. Political science and natural resources emphasis. California State University at Humboldt. Graduated December 1988.

B.A. Political Science. Political and economic aspects of natural resource development, with a particular emphasis in forest ecology and appropriate technology. California State University at Humboldt. Graduated June 1978.

Academic
Honors. Member of PI GAMMU MU Honor Society since 1986.

MILITARY SERVICE

7/1969--
9/1975 U.S. Navy. Air Traffic Controller.
Honorable Discharge.

DECLARATION OF
Ajoy Guha

I, **Ajoy Guha**, declare as follows:

1. I am presently employed by the California Energy Commission in the **Transmission System Engineering Unit of the Siting, Transmission, and Environmental Protection Division** as an **Associate Electrical Engineer**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Transmission System Engineering,** for the Riverside Energy Resource Center Units 3 & 4 Expansion Project, based on my independent analysis of the Small Power Plant Exemption and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated:__________________________ Signed:___Original Signature in Dockets____

At: __Sacramento____________________

RESUME

AJOY GUHA
Associate Electrical Engineer
California Energy Commission
1516 Ninth Street, MS 46
Sacramento, CA 95814

EDUCATION:
MSEE, POWER SYSTEMS ENGINEERING, PURDUE UNIVERSITY, INDIANA
BSEE, ELECTRICAL ENGINEERING, CALCUTTA UNIVERSITY, INDIA

CERTIFICATIONS:
REGISTERED PROFESSIONAL ENGINEER, CALIFORNIA, INDIANA & ILLIINOIS
MEMBER OF IEEE; MEMBER OF THE INSTITUTION OF ENGINEERS OF INDIA

SUMMARY OF PROFESSIONAL BACKGROUND:

Ajoy Guha, P. E. has 34 years of electric utility experience with an extensive background in evaluating and determining current and potential transmission system reliability problems and their cost effective solutions. He has a good understanding of the transmission issues and concerns. He is proficient in utilizing computer models of electrical systems in performing power flow, dynamic stability and short circuit studies, and provide system evaluations and solutions, and had performed generator interconnection studies, area transfer and interconnected transmission studies, and prepared five year transmission alternate plans and annual operating plans. He is also experienced in utilizing Integrated Resource Planning computer models for generation production costing and long term resource plans, and had worked as an Executive in electric utilities and experienced in construction, operation, maintenance and standardization of transmission and distribution lines.

WORK EXPERIENCE:

CALIFORNIA ENERGY COMMISSION, ENERGY FACLITIES SITING AND ENVIRONMENTAL DIVISION, SACRAMENTO, CA, 11/2000-Present.
Working as Associate Electrical Engineer in the Transmission System Engineering unit on licensing generation projects. Work involves evaluating generation interconnection studies and their impacts on transmission system, and providing staff assessments and testimony to the commission, and coordination with utilities and other agencies.

ALLIANT ENERGY, DELIVERY SYSTEM PLANNING, MADISON, WI, 4/2000-9/2000.
Worked as Transmission Services Engineer, performed Generator Interconnection studies and system planning studies.

IMPERIAL IRRIGATION DISTRICT, POWER DEPT., Imperial, California, 1985-1998.
Worked as Senior Planning Engineer in a supervisory position and in Transmission, Distribution and Integrated Resource planning areas. Performed interconnection studies for 500 MW geothermal plants and developed plan for a collector system, developed methodologies for transmission service charges , scheduling fees and losses. Worked as the Project Leader in the 1992 Electricity Report (ER 92) process of the California Energy Commission. Worked as the Project Leader for installation of an engineering computer system and softwares. Assumed the Project Lead in the standardization of construction and materials, and published construction standards.

CITY LIGHT & POWER, Frankfort, Indiana, 1980 – 1985.
Worked as Assistant Superintendent and managed engineering, construction and operation depts.

WESTERN ILLINOIS POWER CO-OP., Jacksonville, Illinois, 1978 – 1980.
Worked as Planning Engineer and was involved in transmission system planning.

THE CALCUTTA ELECTRIC SUPPLY CORPORATION LTD. (CESC), Calcutta, India, 1964 –1978.
Worked as District Engineer and was responsible for managing customer relations, purchasing and stores, system planning, construction, operation and maintenance departments of the most industrialized Transmission and Distribution division of the Utility. Worked as PROJECT MANAGER for construction of a 30 mile Double Circuit 132 kV gas-filled Underground Cable urban project. During 1961-63, worked as Factory Engineer for design, manufacturing and testing of transformers, motor starters and worked in a coal-fired generating plant.

DECLARATION OF
Mark Hesters

I**, Mark Hesters** declare as follows:

1. I am presently employed by the California Energy Commission in the **Strategic Transmission Planning Office** of the Siting, Transmission and Environmental Protection Division as a **Senior Electrical Engineer**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Transmission System Engineering**, for the **Riverside Energy Resource Center** based on my independent analysis of the Small Power Plant Exemption and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated:__________________________ Signed:___Original Signature in Dockets____

At: Sacramento, California

Mark Hesters
Associate Electrical Engineer

Mark Hesters has sixteen years of experience in electric power regulation. He worked in the Engineering Office of the California Energy Commission's Energy Facilities Siting & Environmental Protection Division since 1998 providing analysis of California transmission systems and testimony on transmission systems in several Commission power plant certification processes. Prior to that Mark worked in the CEC's Electricity Analysis Office providing lead analysis on Southern California Edison resource issues and modeling support for all areas of California. He holds a B.S. degree from the University of California at Davis in Environmental Policy Analysis and Planning.

DECLARATION OF
Marie McLean

I, Marie McLean, declare as follows:

1. I am presently employed by the California Energy Commission in the Facilities Siting Office of the Energy Facilities Siting Division as a Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on visual resources for Riverside Energy Resource Center Units 3 & 4 based on my independent analysis of the Small Power Plant Exemption and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated:________________________ Signed: Original Signature in Dockets

At: Sacramento, California

MARIE McLEAN

QUALIFICATIONS SUMMARY

Twenty years experience in the field of environmental research, analysis, and planning, with specific emphasis on the economics of water, energy, and land use and its social, visual, and cultural ramifications. Specific projects involved (1) assessing economic costs and benefits of water delivery contracts and energy sales; (2) conducting and presenting visual analyses of historic and other local, state, and federal resources; (3) preparing local, state, and federal resource assessment forms; (4) determining and communicating benefits and costs of proposed development projects (housing, energy, and water) on the social and economic life of communities in which they are located; and (5) as member of local design review, historic preservation, and housing boards, recommended programs and policies and monitored their implementation.

RECENT PROFESSIONAL EXPERIENCE

California Energy Commission, Planner II, Environmental Office-Facilities Siting, January 2008—present.

Conduct technical analyses for complex facility siting cases and planning studies in the area of socioeconomics and visual resources.

Electricity Oversight Board; June 1, 2007—December 31, 2008.

Developed, conducted, and presented economic studies on energy markets and transmission projects; California Independent System Operator (CAISO) market redesign and technology upgrade program; and investigated, analyzed, and reported the effects of existing and proposed energy programs on supply, demand, and rates.

California Department of Water Resources, State Water Project Analysis Office,
June 2001—July 31, 2007.

Developed and implemented complex analyses of the social, economic, and financial ramifications of contracted and proposed water deliveries and transfers and changes to valuation methods for selling energy in deregulated markets. Researched, identified, and reported on market activities in energy and water and their economic effects on ratepayers.

EDUCATION

Bachelor of Arts, Economics, California State University, Sacramento, 1983

DECLARATION OF
Cheryl Closson

I, Cheryl Closson, declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Office of the Energy Facilities Siting Division as an Engineering Geologist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Waste Management** for the Riverside Energy Resource Center Units 3 & 4 project based on my independent analysis of the Small Power Plant Exemption and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: ___________________ Signed: Original Signature in Dockets

At: Sacramento, California

Cheryl Closson, P.G.

Education:
B.A., Earth Science, 1982
University of California, Berkeley

Professional Licensure:
California Professional Geologist #6651

Professional Experience:
Ms. Closson has over 20 years of experience in energy/mineral resource assessment and environmental regulation, including experience in performance of technical evaluations, project management, policy and standards development, and regulatory compliance. Ms. Closson's breadth of experience provides her with a comprehensive, multi-media perspective and understanding of waste and water technical issues and regulatory concerns.

2007 to Present – Engineering Geologist (Range D),
California Energy Commission

Perform technical evaluations of the waste management, soil and water elements of power plant applications for certification. These evaluations include technical assessments of the potential environmental impacts associated with construction and operation of proposed facilities, as well as evaluation of the proposed project's compliance with applicable federal, state, and local laws, ordinances, regulations, and standards (LORS), and Energy Commission policies.

2006 to 2007 – Hazardous Substances Scientist,
Department of Toxic Substances Control

Provided technical reviews and regulatory guidance to industrial waste generators and the general public on hazardous waste source reduction and pollution prevention; developed guidance and outreach documents to facilitate and promote pollution prevention.

2005 to 2006 – Engineering Geologist (Range D),
Office of Mine Reclamation, Department of Conservation

Conducted technical reviews of plans and cost estimates for reclamation of surface mines in accordance with the Surface Mining and Reclamation Act (SMARA); performed mine site inspections and responded to complaints about mining activities; and developed training workshops for lead agencies, miners, and the public on SMARA-related laws and requirements.

1997 to 2005 – Hazardous Substances Scientist,
Department of Toxic Substances Control

Provided regulatory assessments and guidance to waste generators on a variety of hazardous waste management issues. Developed regulations for the management of hazardous waste and provided analyses of waste-related legislative proposals; developed and delivered training classes and wrote factsheets/guidance documents on management of hazardous wastes; and participated in hazardous waste-related investigations and enforcement efforts.

1991 to 1996 – Associate Engineering Geologist,
State Water Resources Control Board

Conducted technical reviews of water quality planning projects, draft Waste Discharge Requirements and National Pollutant Discharge Elimination System (NPDES) permits, and petitions to the State Board for review of Regional Board decisions. Staff lead and coordinator for both the Cal/EPA oil and gas exploration and production (E & P) regulatory review and the State Board's participation in the Interstate Oil and Gas Compact Commission review of California oil and gas E & P waste management regulatory programs. Prepared analyses of water-related legislative actions and provided regulatory compliance information to dischargers and the general public.

1990 to 1991 – Associate Waste Management Specialist,
California Integrated Waste Management Board

Performed detailed reviews of closure and postclosure maintenance plans for solid waste disposal facilities. Reviews included technical evaluation of the placement of the facility and the appropriateness of mitigation/control features with respect to geologic and hydrologic conditions at the site. Reviewed local agency solid waste disposal plans; prepared Board agenda items, including staff analyses and recommendations; and made presentations to the Board at public hearings and meetings.

1987 to 1990 – Energy Specialist I,
California Energy Commission

Managed geothermal resource assessment and exploratory drilling projects funded by the Energy Commission. Worked with applicants, consultants and resource agencies to design/develop project parameters and conducted technical reviews of products developed. Work included critically evaluating the project geologic environment and technology requirements, and developing a project budget consistent with the available funding, technical requirements, and successful completion of project goals.

1986 to 1987 – Geologist,
I-Chem Research

Performed surface and ground water sampling and monitoring of selenium contamination at Kesterson Reservoir for the U.S. Bureau of Reclamation. Work included implementing quality assurance/quality control measures for all sampling efforts, performing chemical analyses in the field, and conducting chemical analyses in the laboratory of samples collected in the field.

1985 to 1986 – Geologist,
United States Bureau of Reclamation

Conducted field sampling and laboratory studies of soil and water to identify conditions and potential sources of pollution impacting federal reservoirs and canals.

1982 to 1984 – Physical Science Technician/Geological Field Assistant,
United States Geological Survey

Performed geologic field mapping and sampling at various locations in California and Washington states; conducted laboratory tests on rock samples collected in the field; and compiled, constructed, and drafted geologic maps, charts, and diagrams.

Cheryl Closson, P.G.

Education:
B.A., Earth Science, 1982
University of California, Berkeley

Professional Licensure:
California Professional Geologist #6651

Professional Experience:
Ms. Closson has over 20 years of experience in energy/mineral resource assessment and environmental regulation, including experience in performance of technical evaluations, project management, policy and standards development, and regulatory compliance. Ms. Closson's breadth of experience provides her with a comprehensive, multi-media perspective and understanding of waste and water technical issues and regulatory concerns.

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Perform technical evaluations of the waste management, soil and water elements of power plant applications for certification. These evaluations include technical assessments of the potential environmental impacts associated with construction and operation of proposed facilities, as well as evaluation of the proposed project's compliance with applicable federal, state, and local laws, ordinances, regulations, and standards (LORS), and Energy Commission policies.

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State Water Resources Control Board

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California Energy Commission**

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**1986 to 1987 – Geologist,
I-Chem Research**

Performed surface and ground water sampling and monitoring of selenium contamination at Kesterson Reservoir for the U.S. Bureau of Reclamation. Work included implementing quality assurance/quality control measures for all sampling efforts, performing chemical analyses in the field, and conducting chemical analyses in the laboratory of samples collected in the field.

**1985 to 1986 – Geologist,
United States Bureau of Reclamation**

Conducted field sampling and laboratory studies of soil and water to identify conditions and potential sources of pollution impacting federal reservoirs and canals.

**1982 to 1984 – Physical Science Technician/Geological Field Assistant,
United States Geological Survey**

Performed geologic field mapping and sampling at various locations in California and Washington states; conducted laboratory tests on rock samples collected in the field; and compiled, constructed, and drafted geologic maps, charts, and diagrams.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR SMALL POWER PLANT EXEMPTION FOR THE RIVERSIDE RESOURCE CENTER UNITS 3 & 4

Docket No. 08-SPPE-1

PROOF OF SERVICE
Revised (10/6/08)

INSTRUCTIONS: All parties shall either (1) send an original signed document plus 12 copies or (2) mail one original signed copy AND e-mail the document to the address for the Docket as shown below, AND (3) all parties shall also send a printed or electronic copy of the document, which includes a proof of service declaration to each of the individuals on the proof of service list shown below:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-SPPE-1
1516 Ninth Street, MS-15
Sacramento, CA 95814-5512
docket@energy.state.ca.us

APPLICANT

Stephen H. Badgett
Utilities Deputy General Manager
City of Riverside
3901 Orange Street
Riverside, CA 92501
sbadgett@riversideca.gov

Robert Gill
City of Riverside, Project Manager
5901 Payton Avenue
Riverside, CA 92504
bgill@riversideca.gov

APPLICANT CONSULTANT

Mike Tatterson
Power Engineers
3940 Glenbrook Drive
P. O. Box 1066
Hailey, ID 83333
mmtatterson@powereng.com

COUNSEL FOR APPLICANT

Allan J Thompson
21 'C' Orinda Way #314
Orinda, CA 94563
allanori@comcast.net

INTERESTED AGENCIES

California ISO
P.O. 639014
Folsom, CA 95763-9014
e-recipient@caiso.com

INTERVENORS

***Alliance For A Cleaner Tomorrow**
Arthur S. Moreau, Esq.
Klinedinst PC
501 West Broadway, Suite 600
San Diego, CA 92101

ENERGY COMMISSION

Karen Douglas
Commissioner and Presiding Member
kldougla@energy.state.ca.us

James D. Boyd
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Project Manager
fmiller@energy.state.ca.us

Deborah Dyer
Staff Counsel
ddyer@energy.state.ca.us

Public Adviser's Office
publicadviser@energy.state.ca.us

DECLARATION OF SERVICE

I, Mineka Foggie, declare that on November 12, 2008, I deposited copies of the attached Riverside Energy Resource Center Units 3 & 4 Draft Initial Study in the United States mail at Sacramento with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above.

OR

Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service list above.

I declare under penalty of perjury that the foregoing is true and correct.

Original Signature in Dockets