

Final Initial Study

CALIFORNIA  
ENERGY  
COMMISSION

# RIVERSIDE ENERGY RESOURCE CENTER

Application For Small Power Plant Exemption (04-SPPE-1)  
Riverside County



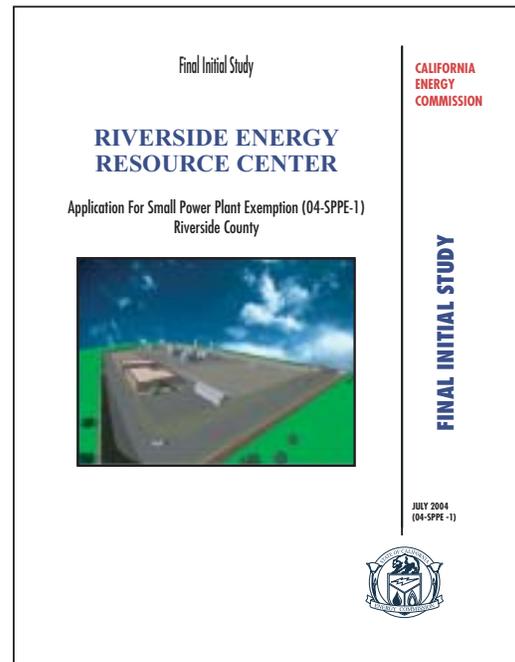
**FINAL INITIAL STUDY**

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(04-SPPE-1)



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## **CALIFORNIA ENERGY COMMISSION**

### **SITING OFFICE**

James W. Reede, Jr., Ed.D  
*Project Manager*

Paul C. Richins, Jr.  
*Licensing Program Manager*

### **SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION**

Terrence O'Brien  
*Deputy Director*

RIVERSIDE ENERGY RESOURCE CENTER (04-SPPE-1)  
FINAL INITIAL STUDY

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## **EXECUTIVE SUMMARY**

Testimony of James W. Reede, Jr., Ed.D

This Final Initial Study contains the California Energy Commission staff's evaluation of the Riverside Public Utilities' Application for a Small Power Plant Exemption (04-SPPE-01) with the exception of the final Air Quality evaluation, which will be published separately. The Executive Summary will be revised to include staff's recommendation at that time.

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 Final Initial Study, staff examined the direct, indirect and cumulative environmental, public health and safety, and transmission systems engineering aspects of the Riverside Energy Resource Center (RERC) 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. Staff received comments on the Draft Initial Study from the Riverside Airport manager, CalTrans, Riverside County Airport Land Use Commission, US Army Corps of Engineers, CURE, and the applicant. Those comments are addressed in this Final Initial Study and in some instances staff added additional mitigation measures to address the issue raised by the commenter.

## **BACKGROUND**

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On April 29, 2004, Riverside Public Utilities (RPU) filed an application for a Small Power Plant Exemption (04-SPPE-01), and staff began its review of the project. The Energy Commission appointed a Siting Committee on May 5, 2004, to oversee the SPPE application.

The analyses contained in this 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 and intervenors; 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 29, 2004.
- Mailed a Notice of Public Hearing and Site Visit on May 11, 2004 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 14, 2004 to announce the Public Hearing and Site Visit and placed 6,111 information flyers as inserts in the Sunday, May 23, 2004 edition of the Riverside Press Enterprise;
- Conducted an Informational Hearing and Site Visit on May 26, 2004;
- Held Public Workshops on May 26 and June 17, 2004;
- Mailed a Notice for a Draft Initial Study Workshop on July 2, 2004 to responsible and trustee agencies, persons with contiguous property to the proposed project, and individuals that have expressed interest in the project.
- Staff issued a Draft Initial Study on July 8, 2004 and sent notices of such to responsible and trustee agencies, libraries, persons with contiguous property to the proposed project and linears, and individuals that have expressed interest in the project.
- Staff held a Draft Initial Study workshop on July 15, 2004, and accepted public comments until July 28, 2004.

## PROJECT DESCRIPTION

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RPU proposes to build and operate a nominal 96 MW simple-cycle power plant on a 12-acre fenced site within the City of Riverside, California. This proposed facility is referred to as the Riverside Energy Resource Center (RERC). RPU would develop, build, own and operate the facility. The proposed site is owned by the City of Riverside and is adjacent to the City's Waste Water Treatment Plant (WWTP) in a light industrial / manufacturing area. The WWTP is located on the west side of the project and includes a 3.3 MW cogeneration facility. The cogeneration plant at the WWTP would be the source of power to cold (black) start the RERC plant. The two facilities would be cross-tied for both electrical power and compressed air. The Waste Water Treatment Plant is in the second year of six-year Capital Improvement Program that is designed to upgrade and maintain the cogeneration plant and WWTP. **(See Project Description)**

The power plant and associated administration building and warehouse would occupy approximately 8 of the 12 acres with the additional 4 acres reserved for equipment storage and construction parking. The proposed plant layout is such that any future expansion could be accomplished with a minimum of piping or equipment relocation. No expansion is currently proposed; however, the applicant has indicated that the plant may be expanded in the future to accommodate increased localized demand. There are no specific plans at this time. Therefore, any expansion would be too speculative at this time to analyze. If the applicant should choose to expand the plant at some future date, they would be required to file a new application with the Commission and be subject to environmental analysis at that time.

The plant would consist of two General Electric LM6000 PC NxGen SPRINT combustion turbine generators equipped with inlet air chiller coils, exhaust ducting, flue gas treatment system to meet the proposed air emission limits, a common chiller package with cooling tower, gas compressor equipment, water storage and treatment facilities,

emission monitoring system, zero liquid discharge (ZLD) wastewater treatment system and electrical transmission and interconnection system and associated auxiliary systems and equipment.

The proposed project would include the construction of approximately 1.75 miles of new double circuit 69kV transmission line interconnecting RERC to the Mountain View and Riverside substations. All transmission line construction would occur in an existing transmission line right-of-way. No new residential property easements are proposed.

Natural gas would be supplied to RERC from a Sempra transmission line that passes by to the northeast corner of the site boundary. A short (~140 ft.) natural gas service line would be constructed to connect from the existing Sempra transmission pipeline to the onsite meter station.

Potable water for sanitary use would come directly from the City's general water supply. The adjacent WWTP would supply reclaimed water for plant process and cooling water. The RERC would utilize a Zero Liquid Discharge (ZLD) system that would eliminate the need to discharge process wastewater to the WWTP.

The proposed project is approximately 0.5 miles north of the Riverside Municipal Airport. The cooling tower cells are parallel to the flight path.

There are no public schools within a  $\frac{3}{4}$  mile radius of proposed project. 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 2 miles southwest of the Project site, and Norte Vista High approximately 1.4 miles west of the Project site. The nearest private school is United Submission Academy (Martial Arts) on Jurupa Ave, approximately 0.3 miles from the facility.

A more complete description of the project, including a description and maps of the proposed upgrades to the transmission, water, and natural gas pipeline upgrades, is contained in the **PROJECT DESCRIPTION** section of this Draft Initial Study.

## **STAFF'S ASSESSMENT**

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Each technical area section of the Final Initial Study contains a discussion of impacts, and where appropriate, mitigation measures presented in the form of conditions of exemption. The Final 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 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
<b>ENVIRONMENTAL</b>				
Agricultural Resources				X
*Air Quality				
Biological Resources		X		
Cultural Resources		X		
Energy Resources				X
Geology and Paleontology			X	
Hazardous Materials and Waste		X		
Hydrology and Water Quality			X	
Land Use and Recreation			X	
Noise			X	
Public Health			X	
Socioeconomics				X
Traffic & Transportation		X		
Visual Resources		X		
Waste Management		X		
<b>ENGINEERING</b>				
Transmission Line Safety & Nuisance			X	
Transmission System Engineering			X	

\*Air Quality analysis will be published separately.

## ENVIRONMENTAL JUSTICE

The minority population within six-miles of the site is 57.52 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 15.03 percent within six miles of the site, which is lower than the 15.8 percent for the City of Riverside but slightly more than that of the state. The Census block immediately adjacent to the project has only two persons and they are both of non-white Hispanic descent (Socioeconomics **Figures 1, 2, & 3**). Staff's analysis shows that with mitigation, there would be no significant direct or cumulative impact to any population including areas with high concentrations of minority or low-income people.

## PROPOSED MITIGATED NEGATIVE DECLARATION

Pursuant to Title 14, California Code of Regulations, Sections 15070 and 15071 and pursuant to the California Energy Commission's Rules of Practice and Procedure (Cal. Code Regs., tit. 20, section 1101 et seq.) and Site Certification Regulations (Cal. Code Regs., tit. 14, section 1701 et seq.), the Deputy Chief of California Energy Commission's Division of Systems Assessment and Facility Siting does prepare, make, declare, publish, and cause to be filed with the County Clerk of Riverside County, State of California, this Mitigated Negative Declaration for the Riverside Energy Resource Center (RERC), Application for Small Power Plant Exemption (04-SPPE-1).

1. The State Energy Resources Conservation and Development Commission (Energy Commission) is responsible for licensing all thermal power plants in California that have a capacity of 50 megawatts (MW) or greater. (Pub. Resource Code, section 25500.) The Energy Commission may exempt power plants from these requirements if they have a capacity of less than 100 MW and if the Energy Commission finds that the project will not create a substantial adverse impact on the environment or energy resources. (Pub. Resources Code section 25541.) Such projects are subject to applicable local permitting requirements.

The Energy Commission is the Lead Agency for all projects that it licenses or exempts. (Public Resources Code section 25519(c).) The Energy Commission proposes to grant the Application for a Small Power Plant Exemption filed by Riverside Public Utilities (RPU) on April 29, 2004, for the Riverside Energy Resource Center (RERC) project. If the Energy Commission grants the exemption, RPU will be required to obtain all necessary local, regional, state and federal permits to construct and operate the proposed facility.

### 2. Title and Short Description of Project:

- a) Riverside Energy Resource Center (RERC), Application for a Small Power Plant Exemption (03-SPPE-1).
- b) The proposed project is to construct and operate a 96-megawatt (MW) generation plant called the Riverside Energy Resource Center (RERC). The plant would consist of two General Electric LM6000 PC SPRINT combustion turbine generators equipped with inlet air chiller coils, exhaust ducting, flue gas treatment system to meet the proposed air emission limits, a common chiller package with cooling tower, gas compressor equipment, water storage and treatment facilities, emission monitoring system, zero liquid discharge (ZLD) wastewater treatment system and approximately 1.75 miles of electrical transmission and interconnection system and associated auxiliary systems and equipment.

### 3. Location of Project:

- a) Riverside (Section 30, T2S, R5W, SBBM), (see PROJECT DESCRIPTION — Figure 1, Proposed Project Site and Transmission Line):

- b) City of Riverside, 5950 Acorn Avenue (see PROJECT DESCRIPTION — Figures 2 and 3)

4. Project Applicant:

Riverside Public Utilities  
3900 Main Street  
Riverside, CA 92522

- 5. Energy Commission staff completed an Initial Study (IS) for the proposed RERC project. The IS concludes that the revisions agreed to by the applicant, prior to release of the IS for public review, will avoid or mitigate all potential significant effects to a point where clearly no significant effects would occur.
- 6. Further information about the RERC, the IS, or the Energy Commission's exemption process may be obtained by contacting the California Energy Commission's Siting Project Manager for the RERC project, James W. Reede, Jr., Ed.D, California Energy Commission, 1516 9<sup>th</sup> Street, Sacramento, CA 95814, Phone (916) 653-1245.
- 7. The mitigation measures included in the project to avoid potentially significant effects are included in the Initial Study at the end of each technical section.

Therefore, the Energy Commission finds that the Initial Study has identified potentially significant effects on the environment, but 1) revisions on the project plans or proposals made by, or agreed to by, the applicant will avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and 2) there is no substantial evidence, in light of the whole record before the agency, that the project, as revised, may have a significant effect on the environment. As a result, the Energy Commission finds that approval of the Application for a Small Power Plant Exemption for the Riverside Energy Resource Center (RERC) will result in no significant adverse environmental impact.

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William J. Keese, Chairman  
California Energy Commission

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Date

# INTRODUCTION

James W. Reede, Jr., Ed.D

## PURPOSE OF THIS REPORT

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The applicant, Riverside Public Utilities (RPU) filed a request for a Small Power Plant Exemption (SPPE) with the California Energy Commission (Energy Commission) on April 29, 2004.

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 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 Initial Study and make recommendations on the SPPE application. 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 29, 2004 for the Application for Small Power Plant Exemption;
- Mailed a Notice of Public Hearing and Site Visit on May 11, 2004 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 14, 2004 to announce the Public Hearing and Site Visit and placed 6,111 information flyers as inserts in the Sunday, May 23, 2004 edition of the Riverside Press Enterprise;
- Conducted an Informational Hearing and Site Visit on May 26, 2004;
- Held Public Workshops on May 26 and June 17, 2004;
- Mailed a Notice for a Draft Initial Study Workshop on July 5, 2004 to responsible and trustee agencies, persons with contiguous property to the proposed project, and individuals that have expressed interest in the project.
- Staff issued a Draft Initial Study on July 8, 2004 and sent notices of such to responsible and trustee agencies, libraries, persons with contiguous property to the proposed project and linears, and individuals that have expressed interest in the project.
- Staff held a Draft Initial Study workshop on July 15, 2004, and accepted public comments until July 28, 2004.

# PROJECT DESCRIPTION

Testimony of James W. Reede, Jr., Ed.D

## PROJECT TITLE

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Riverside Public Utilities, Riverside Energy Resource Center, Application for Small Power Plant Exemption (04-SPPE-01).

## LEAD AGENCY NAME AND ADDRESS

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California Energy Commission  
Systems Assessment and Facilities Siting Division  
1516 Ninth Street  
Sacramento, CA 95814

## PROJECT LOCATION

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Riverside Public Utilities (RPU) proposes to build and operate a nominal 96 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 is referred to as the Riverside Energy Resource Center (RERC) Project. RPU would develop, build, own and operate the facility. **See Figures 1 & 2.**

## PROJECT SPONSOR'S NAME AND ADDRESS

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Riverside Public Utilities  
3900 Main Street  
Riverside, CA 92522

## GENERAL PLAN DESIGNATION

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

## ZONING

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Light Industrial / Manufacturing, (MP)

## DESCRIPTION OF PROJECT

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On April 29, 2004, Riverside Public Utilities (RPU) filed an application for a Small Power Plant Exemption (SPPE). RPU 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.

Riverside Public Utilities (RPU) proposes to build and operate a nominal 96 MW simple-cycle power plant called the Riverside Energy Resource Center (RERC). The plant

would consist of two General Electric LM6000 PC SPRINT combustion turbine generators equipped with inlet air chiller coils, exhaust ducting, flue gas treatment system to meet the proposed air emission limits, a common chiller package with cooling tower, gas compressor equipment, water storage and treatment facilities, emission monitoring system, zero liquid discharge (ZLD) wastewater treatment system and electrical transmission and interconnection system and associated auxiliary systems and equipment. **See Figure 3.**

## **PROJECT SITE AND LOCATION**

The project is proposed to be located on a 12-acre fenced site at 5950 Acorn Avenue in the City of Riverside, Riverside County, California, and would occupy approximately eight acres near the southern side of the project site.

The proposed site is owned by the City of Riverside and is adjacent to the City's Waste Water Treatment Plant (WWTP) in a light industrial / manufacturing area. The Waste Water Treatment Plant is located on the west side of the Project and includes a 3.3 MW cogeneration facility. The cogeneration plant at the WWTP would be the source of power to black (cold) start the RERC plant. The two facilities would be cross-tied for both electrical power and compressed air.

The Waste Water Treatment Plant is in the second year of six-year Capital Improvement Program that is designed to upgrade and maintain the cogeneration plant and WWTP. The Program targets for the cogeneration plant include replacement of the cooling tower in FY 2004-2005 prior to commence of construction of the proposed project and ongoing operations and maintenance of existing equipment. No increase in plant output is included in the Program. The Program projects related to the upgrade of the WWTP are designed to increase plant capacity, replace inefficient infrastructure and reduce maintenance.

The power plant and associated administration building and warehouse would occupy approximately 8 of the 12 acres with the additional 4 acres reserved for equipment storage and construction parking.

RPU would develop, build, own, and operate the RERC to serve residential, industrial, and commercial customers in the City of Riverside exclusively.

The RERC site, natural gas, transmission line, and water pipeline are within the City of Riverside. **Project Description Figure 4** is a map of the RERC site and the surrounding area, the transmission line route, and the water supply line. The proposed transmission lines, water pipelines, and gas pipelines are described in detail below.

There are no public schools within a ¼ mile radius of proposed project. 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 2 miles southwest of the Project site, and Norte Vista High approximately 1.4 miles west of the Project site. The nearest private school is United Submission Academy on Jurupa Ave, approximately 0.3 miles from the facility.

The minority population within six-miles of the site is 57.52 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 15.03 percent within six miles of the site, which is lower than the 15.8 percent for the City of Riverside but slightly more than that of the state.

## **WATER SUPPLY AND USE**

The average daily water demand for the RERC is approximately 105 gallons per minute (gpm) and the approximate maximum daily water demand is 219.6 gpm. 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 WWTP would supply tertiary-treated reclaimed water for plant process water. The RERC would utilize a Zero Liquid Discharge (ZLD) system that would eliminate the need to discharge process wastewater to the WWTP.

## **STORM WATER**

The storm water management system for RERC is proposed to be designed to collect and route storm water to an on-site retention/infiltration basin. The storm water retention basin would be sized to contain the difference in runoff volume between pre and post development of the site for a 50-year storm event and would have an open bottom for infiltration. Overflow from the retention/infiltration basin, if it occurs, would flow on the surface to a storm water catch basin on the WWTP site approximately 200 feet east of the retention/infiltration basin.

## **TRANSMISSION**

Approximately 1.75 miles of 69 kV double-circuit transmission and fiber optics communications line would be required, running from the proposed facility. It would be looped and form two segments tying into both RPU-owned and operated Mountain View and Riverside Substations. All transmission line construction would occur in the existing RPU transmission easement and in some instances be moved into a railroad right-of-way. No new residential property easements are proposed.

The project would require the installation of approximately 47 new, 67-foot and 79-foot metal poles and would replace the current 12 kV poles which would then be underbuilt to the new 69kV line. No new bays at either Substation would be required to accommodate the new incoming circuits. Both of the Substations have adequate space to accommodate the expansion.

## **NATURAL GAS**

Natural gas would be the only fuel required for the facility. Natural gas fuel would be supplied to RERC from a Sempra transmission line that passes next to the northeast corner of the site boundary. A short (~140') natural gas service line would be constructed to connect from the existing Sempra transmission pipeline to the onsite meter station. The pipeline has a Maximum Allowable Operating Pressure (MAOP) of 584 psig and an operating pressure that varies between 350 and 537 psig.

Three 1,000-hp fuel gas compressors, each of which is capable of supplying the needs of one of the two 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. The additional compressor is intended to serve as a backup in the event one of the others is out of service. Inlet scrubbers and a common outlet coalescing filter would 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  $\pm$  20 psig.

Natural gas for the Administration Building and other domestic uses would be supplied via a separate connection to Sempra's gas distribution system.

The proposed new gas delivery connection and pipeline segment would be designed, constructed, and operated in accordance with national safety codes and the safety standards for new gas pipelines stated in the California Public Utility Commission's General Order (G.O.) 112-E.

## **COMBUSTION TURBINE GENERATOR**

The plant would consist of two General Electric 50.1 MW, LM6000 PC NxGen combustion turbine generators (CTG) with the Sprint Power Boost System in a simple cycle configuration. The plant would have a nominal 96 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<sup>1</sup> system) and No<sub>x</sub> 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<sub>x</sub>) emissions from the CTG exhaust and a NO<sub>x</sub> 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**

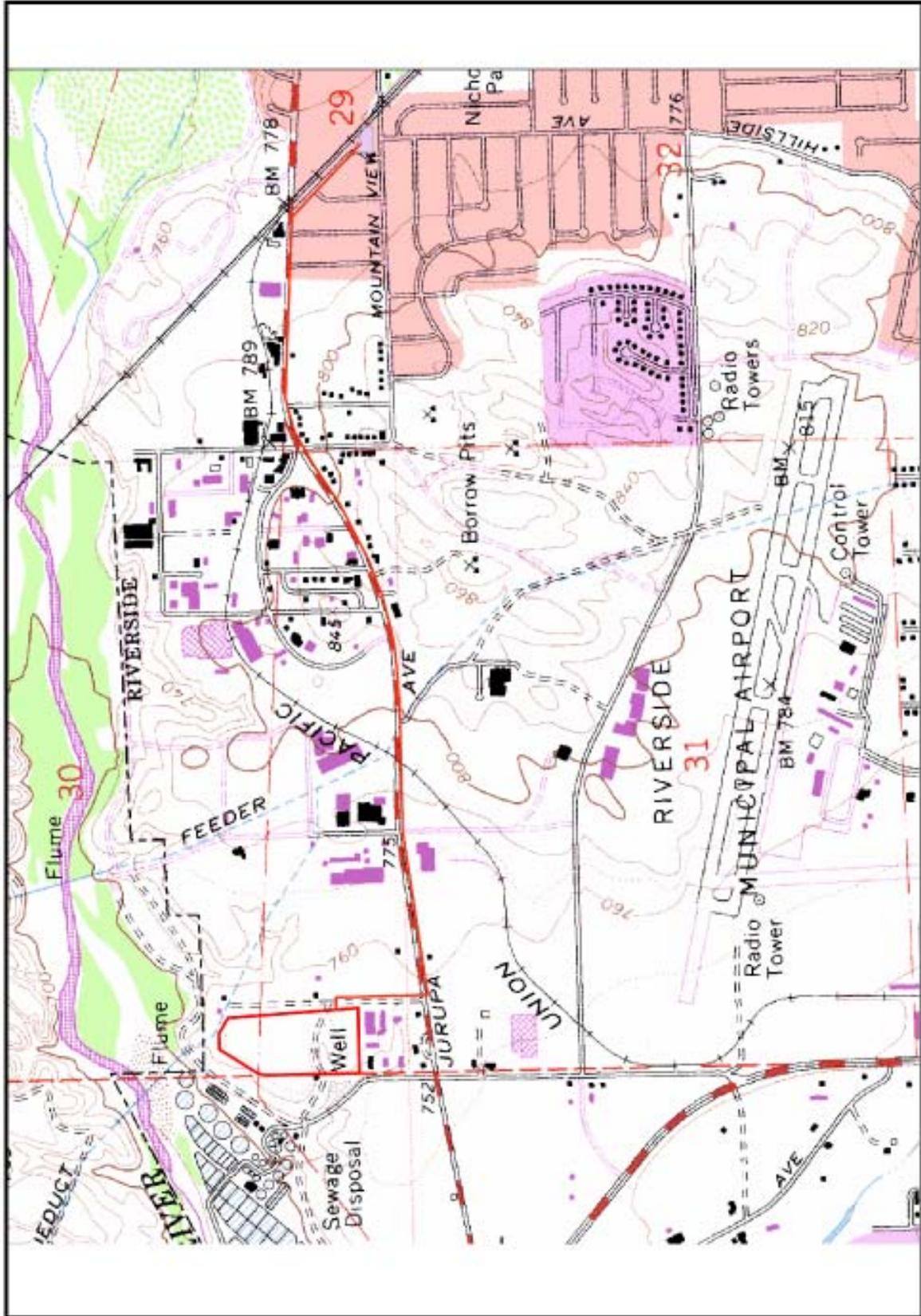
If approved by the Energy Commission, RPU expects to begin construction of the project by October 2004 and begin commercial operation of Unit 1 by June 2005 and Unit 2 by July 2005. The Applicant anticipates beginning full-scale commercial operation to commence in July 2005 for the summer peak season.

RPU estimates the capital costs of the RERC to be \$75 million. RPU expects to employ up to approximately 53 construction workers over the 9-month construction schedule. A permanent professional workforce of approximately 10 to 12 people would operate the plant. Construction payroll costs are estimated to be \$8.9 million while annual operations payroll is expected to be \$280,000 for three plant workers.

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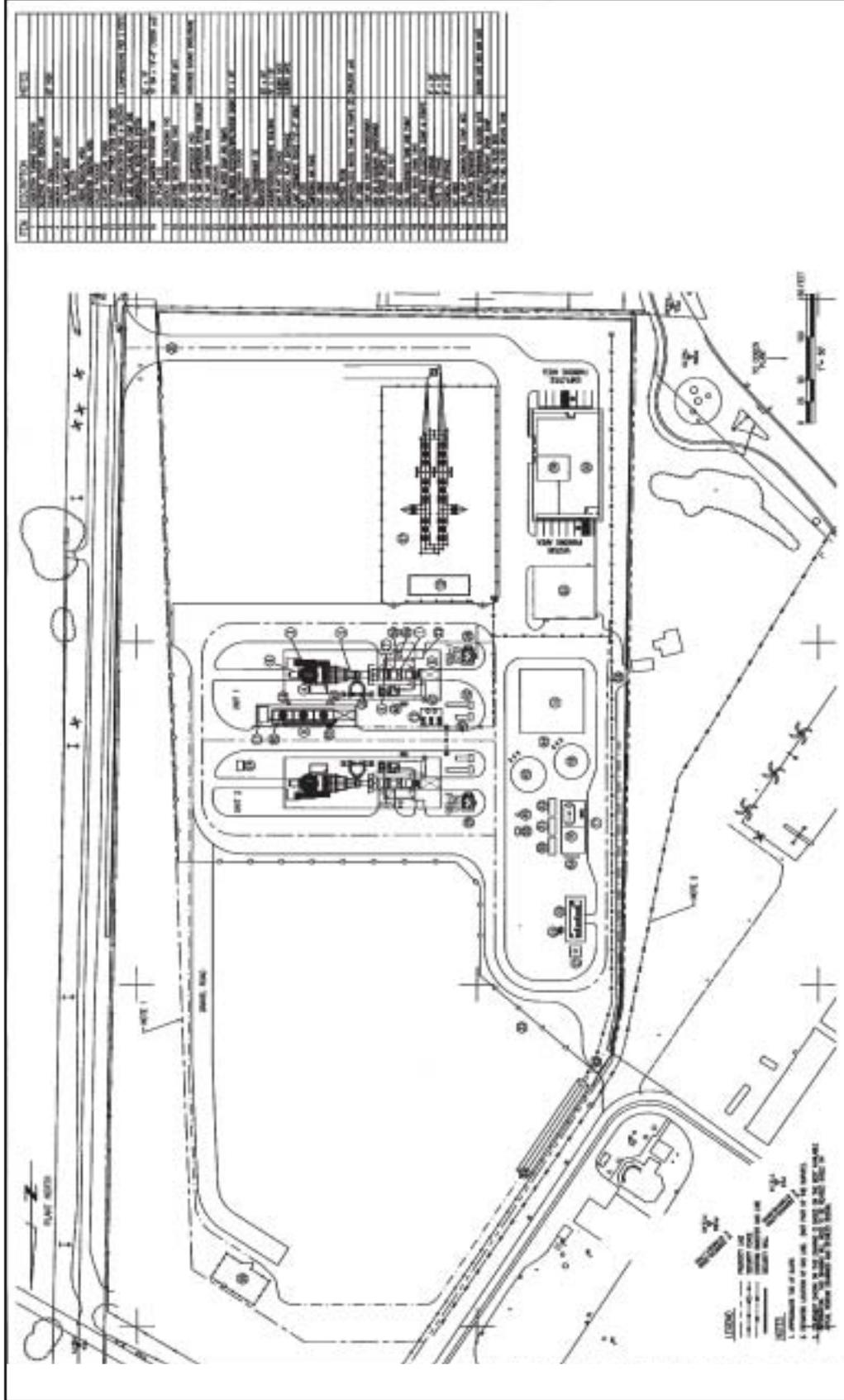
<sup>1</sup> SPRINT is General Electric's acronym for the Spray Intercooling system that injects water ahead of the low pressure and high pressure compressors.

**PROJECT DESCRIPTION - FIGURE 1**  
 Riverside Energy Resource Center - Local View

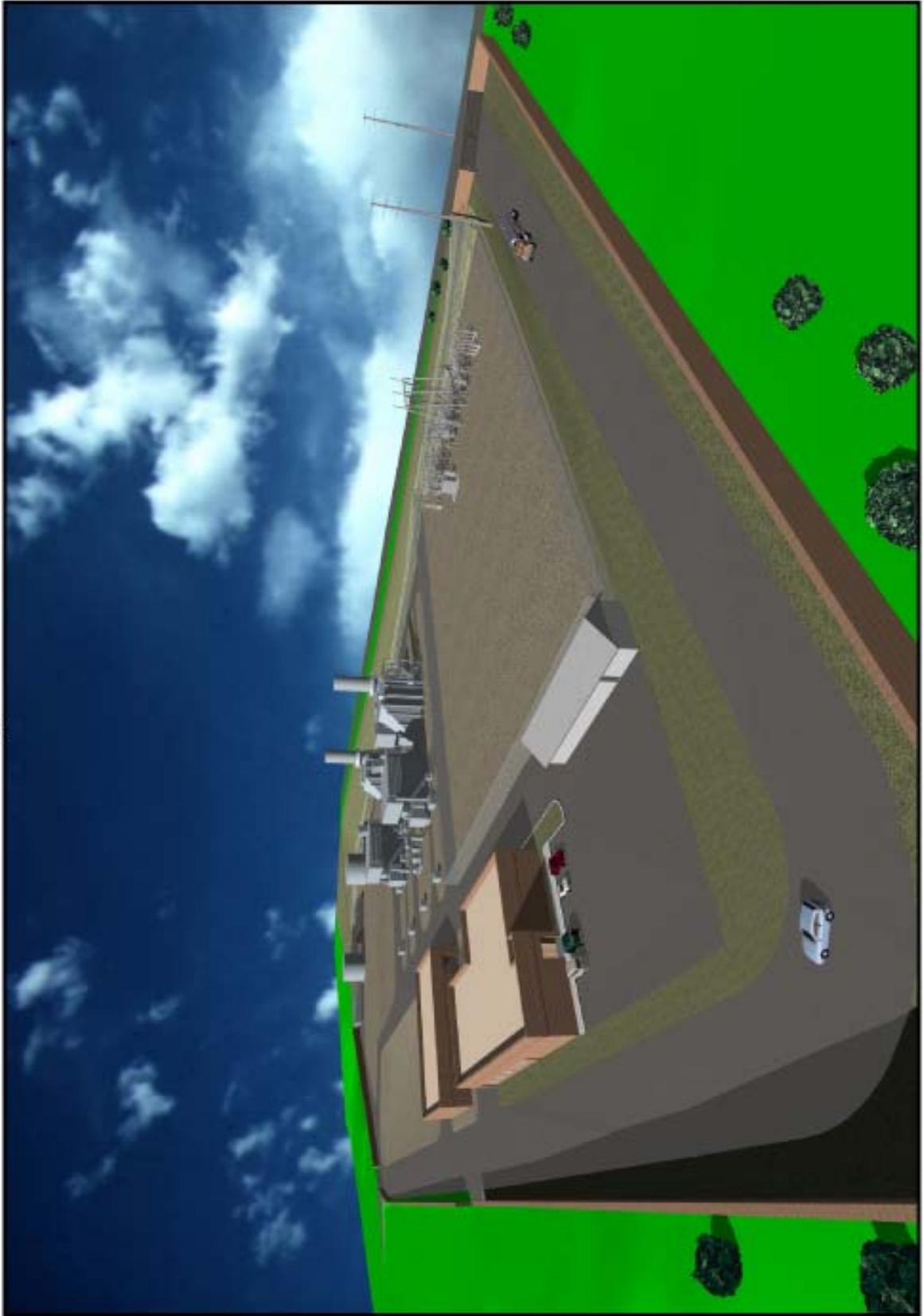


CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2004  
 SOURCE: USGS

PROJECT DESCRIPTION - FIGURE 2  
 Riverside Energy Resource Center - Plot Plan



**PROJECT DESCRIPTION - FIGURE 3**  
Riverside Energy Resource Center - Aerial View

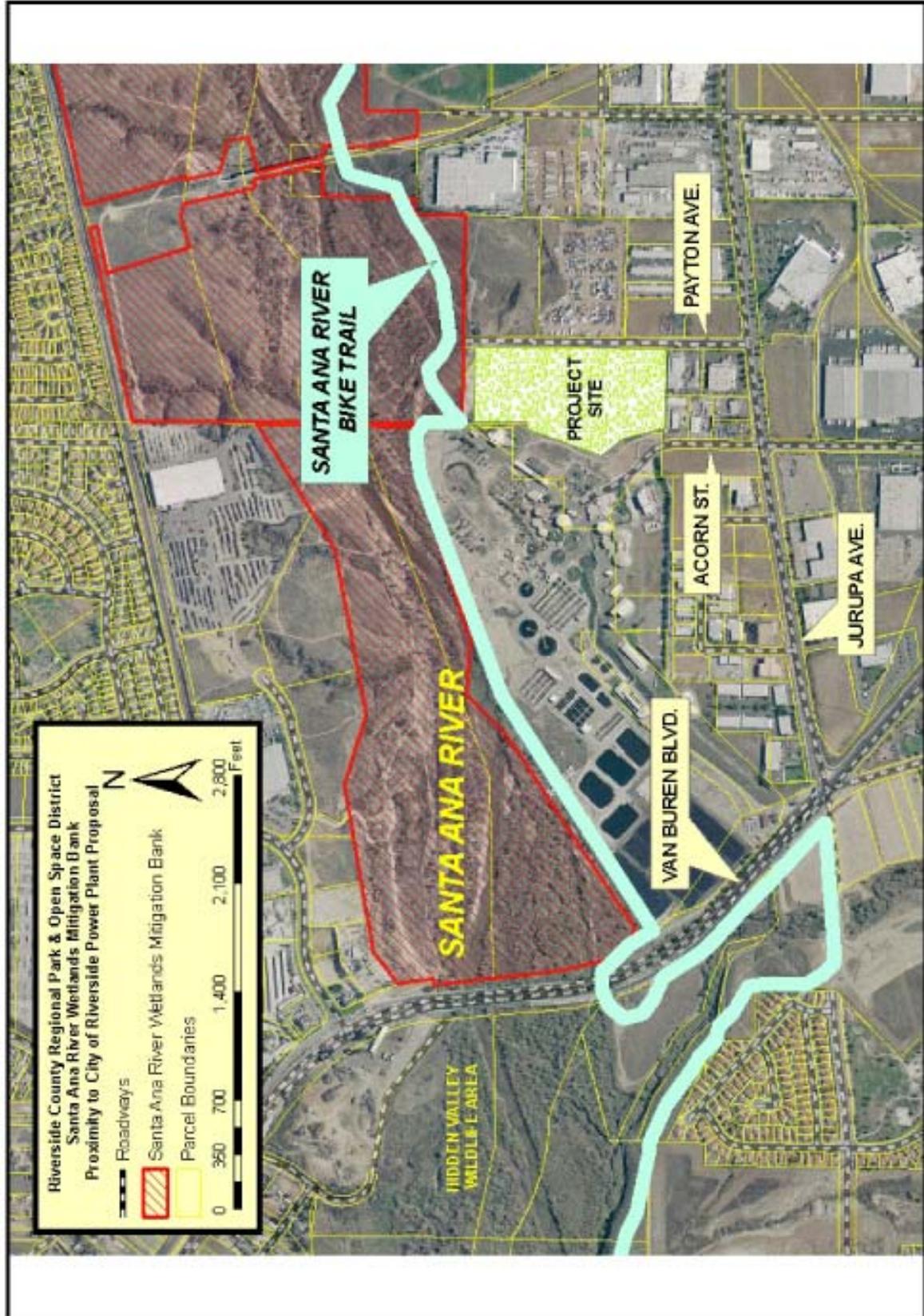


JULY 2004

PROJECT DESCRIPTION

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2004  
SOURCE: City of Riverside Public Utilities/Power Engineers

**PROJECT DESCRIPTION - FIGURE 4**  
Riverside Energy Resource Center - Aerial Overview



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2004  
SOURCE: City of Riverside Public Utilities/Power Engineers

# AGRICULTURE AND SOIL RESOURCES

Testimony of Tony Mediati

## INTRODUCTION

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The agriculture and soil resources section discusses potential impacts of the proposed Riverside Energy Resource Center (RERC) regarding agricultural lands. Energy Commission staff's objective is to ensure that there will be no significant adverse impacts to agricultural land resources during project construction, operation and closure. Energy Commission staff designated all of the CEQA checklist items for agricultural resources as "less than significant impact with mitigation" or "no impact". A brief overview of the project is provided, as are comments regarding selected CEQA checklist items with respect to agricultural resources. The section concludes with the staff's determination that conditions of exemption are not required.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

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Staff has identified the following LORS as useful significance criteria to evaluate whether the proposed project will have a substantial adverse impact on agriculture and soil resources.

### FEDERAL

#### Clean Water Act

The Clean Water Act (33 USC § 1257 et seq.) requires states to set standards to protect water quality through the regulation of point source and certain non-point source discharges to surface water. These discharges are regulated through requirements set forth in specific or general National Pollutant Discharge Elimination System (NPDES) permits. Stormwater discharges during construction and operation of a facility, and incidental non-storm water discharges associated with pipeline construction also fall under this act, and are addressed through a general NPDES permit. In California, requirements of the Clean Water Act regarding regulation of point source discharges and storm water discharges are delegated to, and administered by, the nine Regional Water Quality Control Boards (RWQCB).

### STATE

#### California Land Conservation Act of 1965

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space uses. The landowner commits the parcel to an annually renewing ten-year period wherein no conversion out of agricultural use is permitted. In return, the land is taxed at a rate based on the actual use of the land for agricultural purposes, as opposed to its unrestricted market value. Participation in the Williamson Act program is dependent on county adoption and implementation of the program, and is voluntary for landowners.

The Farmland Security Zone is additional agricultural land conservation legislation that went into effect August 24, 1998. This program allows local governments and landowners to rescind a Williamson Act contract and simultaneously place the farmland under a Farmland Security Zone contract, which has an initial term of at least 20 years. A Farmland Security Zone contract offers landowners greater property tax reduction than the Williamson Act by valuing enrolled real property at 65 percent of its Williamson Act valuation, or 65 percent of its Proposition 13 valuation, whichever is lower.

### **Farmland Mapping and Monitoring Program**

The California Department of Conservation established the Farmland Mapping and Monitoring Program (FMMP) in 1982 in response to a critical need for assessing the location and quantity of agricultural lands and conversion of these lands to other uses. It is the only statewide land use inventory conducted on a regular basis that identifies the conversion of agricultural land to urban and other uses. Every even numbered year FMMP issues a Farmland Conversion Report. FMMP data is used in elements of some county and city general plans, in environmental documents as a way of assessing project impacts on Prime Farmland and in regional studies on agricultural land conversion, and in assessing impacts of proposed projects reviewed through the process.

## **LOCAL**

### **City of Riverside Grading Permit**

The City of Riverside Municipal Code, Chapter 17.16 sets forth Grading Permit Application Requirements.

### **City of Riverside General Plan – Resources Element**

The proposed RERC will also comply with the City of Riverside General Plan Resources Element, which is important to the long-term development potential of Riverside and depends heavily on the quantity, quality and cost-effective availability of resources to support expected population growth and development.

## **SETTING**

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The RERC project would occupy eight acres within a 12-acre parcel near the City of Riverside's Wastewater Treatment Plant. The other four acres within the parcel would be used for equipment storage and construction parking. The project would be a peaking facility consisting of two aero-derivative combustion turbine generators with Selective Catalytic Reduction. An on-site substation, approximately 1.75 miles of transmission line, a natural gas and water supply interconnection will also be included in the project. After construction, the area used for construction parking and equipment storage would be available for other uses.

## 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.

<b>ENVIRONMENTAL CHECKLIST</b>	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>AGRICULTURE RESOURCES</b> -- 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 (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				<b>X</b>
B. Conflict with existing zoning for agricultural use, or a Williamson Act contract?				<b>X</b>
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?				<b>X</b>
D. Impact jurisdictional wetlands?				<b>X</b>
E. Result in substantial soil erosion or the loss of topsoil?		<b>X</b>		
F. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				<b>X</b>
G. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				<b>X</b>

## DISCUSSION OF IMPACTS

### A. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance: No Impact

#### Prime Farmland

Prime Farmland is land that has the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods. Prime Farmland must have been used for the production of irrigated crops at some time during

the two update cycles prior to the mapping date (generally four years prior to mapping). It does not include publicly owned lands for which there is an adopted policy preventing agricultural use.

Based on the above descriptions and soil characteristics, the RERC project site could not be classified as Prime Farmland. According to a recent Phase I Environmental Assessment, the site has been vacant for many years. The Phase I Environmental Assessment did not find any indication that the site had ever been irrigated (RERC 2004b). Its past uses include dry farming and use as a borrow pit. The native material has been removed to a depth of approximately 25 feet. The current surface material consists of light brown silty sands. These silty sands are approximately 1.5 feet thick. Below the sand is bed rock. With the removal of material from the borrow pit, this site is no longer suitable for agricultural production. Therefore, the site does not meet the requirements for the classification of Prime Farmland.

### **Farmland of Statewide Importance**

Farmland of Statewide Importance is land other than Prime Farmland which has a good combination of physical and chemical characteristics for the production of crops. It must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use. Based on the above descriptions, the site soil characteristics along the transmission route could be classified as Prime Farmland or Farmland of Statewide Importance. The proposed RERC transmission line route will proceed along the existing road and railroad right-of-ways. There is no agricultural land in the area in or around the proposed transmission line route, nor has the area been irrigated for agriculture in recent years; therefore, the area does not meet the requirements for the classification of Prime Farmland or Farmland of Statewide Importance.

There is no Farmland of Statewide Importance identified at or near the project site or its associated linear facilities. No commercial agricultural land was identified on or adjacent to the Project site or transmission line alignment based on on-site investigation and aerial photography review (RERC 2004a).

### **Unique Farmland**

Unique Farmland is land that does not meet the criteria for Prime Farmland or Farmland of Statewide Importance, but that has been used for the production of specific high economic value crops at some time during the two update cycles prior to the mapping date. It has a special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality and/or high yields of a specific crop when treated and managed according to current farming methods. Examples of such crops may include oranges, olives, avocados, rice, grapes, and cut flowers. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use. The nearest parcel of land designated as Unique Farmland is located approximately 0.5 miles from the plant site and will not be affected by the project (RERC 2004a).

The proposed project will not impact farmland.

**B. Conflict with Existing Zoning: No Impact**

The project site is currently vacant and is zoned Manufacturing Park (MP). The proposed RERC is consistent with the City of Riverside's current zoning, but will require a conditional use permit. The proposed RERC is not subject to the Williamson Act. See the Land Use section of this initial study for additional discussion.

**C. Conversion of Farmland: No Impact**

The proposed project is consistent with the General Plan designation and established zoning for the areas affected by the proposed project, and would not involve the extension of urban services to new properties beyond the project site. The project would not involve other changes that could result in conversion of farmland to non-agricultural uses. This project will not impact agricultural lands or result in the conversion of any lands that are used for agricultural purposes.

**D. Impact Jurisdictional Wetlands: No Impact**

There are no wetlands located on the site. In addition, no wetlands will be created or filled-in as a result of this project. Stormwater will be directed to an on-site underground retention/infiltration basin. Soil particles carried in the stormwater will tend to settle out in the retention/infiltration basin. When the capacity of the basin is exceeded the overflow will be drained into the City of Riverside's Wastewater Treatment plant (RERC 2004c). Therefore, sediment from this project will not be deposited into any jurisdictional wetlands.

The proposed project will not impact jurisdictional wetlands.

**E. Soil Erosion or the Loss of Topsoil: Less than Significant with Mitigation Incorporated**

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 will employ mitigation and sedimentation/erosion control measures consistent with construction Best Management Practices (BMPs). Due to the soil types of the project site and linear features problems with loss of soil from the project site are not anticipated. BMPs will be imposed during and after construction to minimize the potential for soil erosion and sedimentation associated with construction of the RERC. 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. All construction activities will be conducted in accordance with the General Construction Permit. Typical BMP activities will include:

- Minimizing disturbance of protective soil covers;
- Treating disturbed soil, soil storage and similar areas with dust suppressants, windbreaks or water to reduce wind erosion and subsequent emissions as appropriate;

- Stabilizing disturbed soil, soil storage and similar areas. Stabilization techniques would include but not be limited to mulching, revegetation and erosion control matting;
- Properly maintaining access roads, parking lots and similar areas;
- Controlling site runoff by employing temporary drains, swales and diversions to direct water to sediment basins or traps;
- Employing sediment trapping and filtering measures such as silt fence, sand bag dikes and catchments;

Permanent erosion control measures would also be addressed as part of the RERC Storm Water Pollution Prevention Plan (SWPPP) for industrial operations.

With the implementation of BMPs, the potential impacts from the project on soil erosion and loss of topsoil will be less than significant.

#### **F. Expansive soil: No Impact**

Soils containing a high clay content often exhibit a relatively high potential to expand when saturated and contract when dried out. This shrink/swell movement can adversely affect building foundations, often causing them to crack or shift, with resulting damage to the buildings they support. The RERC project site has a convergence of three soil series types including Buchneau loam (BhC), Fallbrook sandy loam (FbF2) and Terrace escarpments (TeG). There is also some fill material described as silty sand. These soils do not have a high clay content that would cause adverse effects to building foundations, therefore, there will be no impact from expansive soils.

#### **G. Soils incapable of supporting septic tanks: No Impact**

The RERC proposes to connect to the City of Riverside's Wastewater Treatment Plant. Septic tanks are not proposed; therefore, there will be no impact.

### **CUMULATIVE IMPACTS**

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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 will not have an impact on zoning. This project will 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 will be incorporated into the SWPPPs that are required for construction and industrial operations. The project will 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

## **RESPONSE TO AGENCY AND PUBLIC COMMENTS**

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No comments have been received in this topic area.

## **CONCLUSIONS**

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Based on the discussion above, impacts on agricultural and soil resources will be less than significant.

## **PROPOSED CONDITIONS OF EXEMPTION**

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None proposed.

## **REFERENCES**

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**RERC (Riverside Energy Resource Center) 2004a:** Application for Small Power Plant Exemption. Submitted to the California Energy Commission on April 26, 2004.

Cited in the text as: (RERC 2004a)

**RERC (Riverside Energy Resource Center) 2004b:** Applicant's Phase I Environmental Site Assessment. Submitted to the California Energy Commission on June 8, 2004.

Cited in the text as: (RERC 2004b)

**RERC (Riverside Energy Resource Center) 2004c:** Applicant's Data Responses 1 - 72. Submitted to the California Energy Commission on June 14, 2004.

Cited in the text as: (RERC 2004c)

# **BIOLOGICAL RESOURCES**

Testimony of Melinda Dorin

## **INTRODUCTION**

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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 (RERC) located in Riverside County, California. The primary focus is on 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 planning and compensation measures to reduce potential impacts to less than significant levels.

## **LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)**

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Staff has identified the following LORS as useful significance criteria to evaluate whether the proposed project will have a substantial adverse impact on biological resources.

### **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., designate and provide 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, prohibit the take of migratory birds, including their eggs.

#### **Clean Water Act of 1977**

Title 33, United States Code, section 404 et seq., prohibit 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 thereof of the foregoing eagles.

## **STATE**

### **California Endangered Species Act**

Fish and Game Code, sections 2050 through 2098, protect 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 prohibit 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. designate 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. designate 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 a set of policies to preserve open space and protect natural resources that are sensitive, rare, threatened, endangered and irreplaceable. 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 or Plan) 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 that benefit species the most.

### **SETTING**

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The proposed RERC would be located along the Santa Ana River adjacent to the existing City of Riverside Wastewater Treatment Plant (WWTP) in Western Riverside County. The area has long hot summers and precipitation ranges from an average 8 inches a year at the coast to 30 inches in the mountains. Historically, the habitat consisted of chaparral ranging from coastal sage scrub to upper chaparral at about 5,500-foot elevation. The vegetation has adapted to the dry climate and is a fire dependent ecological community (Schoenherr p. 313). Riverside County has a rapidly growing population, thus much of the chaparral is being lost to urbanization. Conversion of the chaparral to grazed land, agricultural crops, industry and urban areas has fragmented much of the historical habitat and eliminated the native species from much of their historical ranges.

The Santa Ana River has been channeled and altered from its more natural wandering river state, although in the vicinity of the proposed site the riparian corridor along the river has been restored and wetlands developed. The two main restored areas in the vicinity are the Hidden Valley Wildlife Area and the Santa Ana River Wetlands Mitigation Bank. They receive water from the WWTP all year 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 within the vicinity of the proposed RERC is contained in **Biological Resources Table 1**.

### **POWER PLANT FACILITY AND LAYDOWN AREA**

The 12-acre site would consist of an 8-acre plant site and 4 acres to be used as storage and laydown area. When the Tequesquite Landfill was built, the area was excavated for fill material. The site is flat with a gradual slope towards the WWTP and the Santa Ana River. As a result of the excavation, the site is surrounded on the south and east side with steep walled berms. Large boulders that became exposed during excavation were left in several piles on the site. The boulders are sloughing and the substrate around the piles is sandy with small mammal burrows noted among the boulder piles.

The habitat onsite is mostly degraded early successional stage of coastal sage scrub with native plants such as flattop buckwheat (*Eriogonum fasciculatum*), California poppy (*Eschscholzia californica*) and arroyo lupine (*Lupinus succulentus*) and non-native species such as wild oat (*Avena fatua*), Mediterranean grass (*Schismus barbatus*) and red-stem filaree (*Erodium cicutarium*) present (RERC 2004a, page 127 and Figure 6.3-1). A wintering burrowing owl was observed outside a burrow on the site in December 2003 surveys but has not been seen again in subsequent monthly surveys. No other sensitive species have been observed in reconnaissance level surveys (RERC 2004, p. 137). Other species such as the western fence lizard (*Sceloporus occidentalis*), red-tailed hawk (*Buteo jamaicensis*) and California ground squirrel (*Spermophilus beecheyi*) were also observed at the site. For a complete list of observed species see the application for a small power plant exemption (RERC 2004a Appendix 6.3).

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

Common Name PLANTS	Scientific Name	STATUS*
<b>PLANTS</b>		
San Diego ambrosia	<i>Ambrosia pumila</i>	FE/--/List 1B
Parry's sunflower	<i>Chorizanthe parryi</i> var. <i>parryi</i>	--/--/List 3
Santa Ana River woolly-star	<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>	FE/SE/List 1B
Rayless ragwort	<i>Senecio aphanactis</i>	--/--/List 2
Brand's phacelia	<i>Phacelia stellaris</i>	--/--/List 1B
<b>FISH</b>		
Arroyo chub	<i>Gila orcutti</i>	--/CSC
Santa Ana sucker	<i>Catostomus santaanae</i>	FT/CSC
<b>BIRDS</b>		
Western burrowing owl	<i>Athene cunicularia hypugea</i>	--/CSC
Western yellow billed cuckoo	<i>Coccyzus americanus occidentalis</i>	FC/SE
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	--/SE
Coastal California gnatcatcher	<i>Poliophtila californica californica</i>	FT/CSC
Least Bell's vireo	<i>Vireo bellii pusilus</i>	FSC/CSC
<b>REPTILES</b>		
San Diego horned lizard	<i>Phrynosoma coronatum blainvillei</i>	--/CSC
Northern red-diamond rattlesnake	<i>Crotalus ruber ruber</i>	--/CSC
<b>MAMMALS</b>		
Western mastiff bat	<i>Eumops perotis californicus</i>	--/CSC
San Diego black-tailed jackrabbit	<i>Lepus californicus bennettii</i>	--/CSC
Stephen's kangaroo rat	<i>Dipodomys stephensi</i>	FE/SE
Northwestern San Diego pocket mouse	<i>Chaetodipus fallax fallax</i>	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;		

Source: California Natural Diversity Database (CNDDB 2004) and RERC 2004a

## **LINEAR FACILITIES**

### **Natural Gas Pipeline**

The natural gas pipeline would travel from the onsite metering station approximately 140 feet to the northeast corner of the site and tie in to an existing natural gas pipeline. The gas pipeline is contained onsite and the habitat and species present are discussed above.

### **Water Pipeline**

Reclaimed water for power plant cooling and make up process water would be supplied from the WWTP adjacent to the proposed RERC. Landscaping would also be watered using reclaimed water. The proposed RERC is being designed as a Zero Liquid Discharge Facility (ZLD) so no pipeline back to the WWTP is needed. The reclaimed water supply pipeline does not leave the RERC site; the habitat that would be crossed is discussed above (RERC 2004a, p. 19).

The City of Riverside will supply potable water for sanitary and fire uses. The pipeline from the site to the tie in at Acorn Road would be approximately 60 feet long and would be entirely contained in the habitat described above (RERC 2004a, p. 19).

### **Electric Transmission Line**

An existing 69kV line would be replaced with a new 69kV line and the tower poles upgraded to carry the existing lines as well as the new line. The new 80-foot poles would be steel. The line is approximately 1.7 miles long and travels from the project site to the Mt. View substation. The route starts from the southern portion of the site and turns south along the east side of Payton Avenue for approximately 1,200 feet. It would turn east at Jurupa Avenue, and follow along the south side of Jurupa Avenue for approximately 7,000 feet to Sheppard Street where it will turn southeast and run along the southwest side of Sheppard Street along the railroad tracks for approximately 800 feet to the Mt. View Substation. Ruderal habitat is found under the transmission lines between the site and Payton Avenue. From there to the substation the transmission line is contained entirely on sidewalks and disturbed edges of road shoulders. No sensitive species were observed on the transmission line route during survey. (RERC 2004a, pp. 26 and 128.)

## IMPACTS

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

<b>ENVIRONMENTAL CHECKLIST</b>	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>BIOLOGICAL RESOURCES -- Would the project:</b>				
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**

The species listed in **Biological Resources Table 1** are all found within 5 miles of the RERC project site, with at least one burrowing owl wintering on site and the least Bell's vireo and southwestern willow flycatcher occupying the riparian area adjacent to the site (County 2004, pers. com.; RERC 2004a section 6.3).

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 red-tailed hawks that have been observed overhead. Prey species for red-tailed hawks were observed on the proposed site. 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, the applicant proposes to use the MSHCP, and pay a \$5,620 fee per acre developed (County Ordinance 810.2). The total cost for habitat compensation mitigation would be \$67,440; to be paid at the time building permits are received and prior to ground disturbance activities. The fees collected will be used by the administrator of the MSHCP to purchase habitat and set up a long term endowment account to manage the parcels for the benefit of the species covered in the MSHCP.

As part of clearing activities the applicant will remove the boulders that exist on site. Methods for removal include transport by truck for those boulders that are transportable, moving them for use in landscaping both onsite and offsite, or breaking up the largest ones with an explosive charge. Since the boulder piles provide a habitat niche for small mammals, the burrowing owl, and potentially other animals, the applicant should take care to prevent harm to individual animals. A biological monitor should be onsite during site clearance and boulder removal to prevent unnecessary injury to animals vacating the area.

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. The loudest construction activity on the site, measured at 50 feet away would be from heavy equipment such as a grader (86 dB(A)), dozer (88 dB(A)), and a scraper (89 dB(A)) (RERC 2004a, table 6.7-7). During the nesting season, the USFWS requires a 500 foot setback from construction activity to the riparian corridor (USFWS pers. com.).

The project site is 790 feet from the recreation trail, and the recreation trail is closer to the project site than the riparian area (RERC 2004a, p 199; Final Initial Study Figure 4). 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 2004a, p. 205). 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 et al, 1995; Sarigul-Klijn 1997), depending on the study and the species. Based on the modeled levels (51 dB(A)) provided by the applicant in the SPPE application and staff's analysis, noise would not result in a significant impact to nesting least Bell's vireo, as the cumulative total is below the levels research has shown to affect wildlife. Neither construction nor operation noise at the modeled levels would have a significant impact on least Bell's vireo using the riparian corridor.

Red-tailed hawks and other raptors are known from the area. Adverse impacts to raptors can occur from collisions with and electrocution from transmission lines if they are not designed as bird-friendly. Staff requested that the applicant design the

new transmission lines to meet *The Avian Power Line Interaction Committee Guidelines* (APLIC 1996). The applicant submitted the requested line design on June 24, 2004 (RERC 2004e). The line spacing is greater than the APLIC recommended bird safe spacing and would reduce impacts from collisions to less than significant. However, information on whether the groundwire will be insulated was not included. In order to ensure a raptor safe design staff is requiring construction to meet the APLIC guidelines. This will reduce potential impacts from collisions and electrocutions to less than significant (Biological Resources Condition of Exemption **BIO-1**).

**B. Effect on Riparian Habitat or other Sensitive Community: Less than Significant with Mitigation Incorporated**

There are no sensitive communities or riparian habitat on the proposed project site that could be impacted from construction activities. The riparian corridor along the Santa Ana River 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 ZLD facility there would be no discharges from the project. Storm water would flow to the WWTP if the storm water basin reached capacity. For more information on the storm water basin capacity and design, see the **Water Resources** Section. No other sensitive communities would be impacted by the project or along the linear facilities. 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.

**C. Effect on Wetlands: No Impact**

There are no wetlands on the project site that would be impacted from construction of the RERC. 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 discharges from the project. Storm water would flow to the WWTP if it overtops the detention basin and Best Management Practices (BMPs) will be in place to prevent run-off to the Santa Ana River (see **Water Resources Section**). No other wetlands would be crossed, or potentially filled by the proposed project linear facilities. There would be no impact to wetlands from construction and operation of the proposed RERC.

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

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 mitigation measures the RERC would have a less than significant impact.

A wintering burrowing owl was observed on the RERC project site. The site is, therefore, used at least part of the year as either a stop-over during migration, or as a wintering ground. The applicant has proposed mitigation measures that are consistent with the CDFG burrowing owl guidelines (1995) in order to reduce significant impacts. The measures include, but are not limited to, exclusion and relocation of any owls and the construction of two artificial burrows for each

occupied burrow removed. Artificial burrows would be constructed adjacent to the site in the berms (RERC 2004c, Data Response 24).

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 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. For information on BMPs and proposed water use, see the **Water Resources** Section.

There are known nesting least Bell's vireos pairs adjacent to the site that could be impacted by construction noise, although the nursery site would not be impacted directly from construction or operation. For a discussion on 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 reduced to less than significant.

#### **E. Conflict with Local Policies: No Impact**

Staff concludes that the proposed project would not conflict with any local biological resources policies or ordinances.

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

The County of Riverside has adopted a MSHCP that includes the proposed RERC site within the boundaries of The Cities of Norco/Riverside Area Plan, Sub Unit Santa Ana River South. The City of Riverside has opted to pay into the MSHCP fund for the permanent disturbance of 12 acres of scrub habitat at the site. The per-acre fee the City pays would be used to conserve and manage habitat on a regional basis that meets the Plan criteria. The fees are collected and used by the Western Riverside County Regional Conservation Authority.

The USFWS and the CDFG issued their permits for the MSHCP on June 22, 2004. The County ordinance supporting funding of the MSHCP requires \$5,620 per industrial acre developed (County Ordinance 810.2). For 12 acres, the City would be required to pay \$67,740 (Biological Resources Condition of Exemption **BIO-2**).

The applicant has identified other incidental take minimization measures in the Plan that require avoidance measures and BMPs including the following:

- Preconstruction surveys prior to ground disturbing activities to ensure clearance of sensitive species. Monthly field visits would be continued at the proposed site to evaluate whether breeding burrowing owls are using the site, and to search for wintering burrowing owls and other sensitive species.
- 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.

- Species specific measures would be implemented if burrowing owls are encountered on site or if other sensitive species are found on site in preconstruction surveys that were not previously encountered.
- Burrowing owl species specific measures include relocation following the CDFG guidelines (CDFG 1995). If one way doors are used to exclude owls, the burrows will be monitored and hand excavated to ensure the individual has evacuated the burrow prior to ground disturbing activities. At least two artificial burrows will be constructed in the slope around the site, with an additional two artificial burrows for each active burrow used by a wintering or nesting burrowing owl.
- BMP's will be in place to keep any site runoff from contaminating the Santa Ana River or the riparian corridor.
- The applicant will prepare an end of construction report that discusses sensitive species encountered, monitoring performed, mitigation measures implemented, and the success of those measures to the MSHCP (RERC 2004a, p.145-8).

The applicant has proposed to implement the above mitigation measures that are consistent with the measures in the MSHCP and would abide by any additional mitigation measures for species that may be encountered in the preconstruction surveys. With the above mitigation measures incorporated, the RERC would not conflict with the provisions of an adopted Plan. Adopting the above avoidance and take minimization measures would also reduce potential impacts to sensitive species to less than significant and are included as a Biological Condition of Exemption (**BIO-3**).

## **CUMULATIVE IMPACTS**

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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 is being proposed in an industrial area that is already disturbed. The County has sought to reduce cumulative impacts by implementing a regional MSHCP so habitat may be conserved in larger contiguous blocks and conservation can be targeted in areas that have the likelihood of benefiting the most species. As long as the MSHCP is implemented and the RERC buys into the MSHCP, the project's cumulative impacts to habitat loss would be less than significant.

The RERC has been proposed also in an area that reduces the need for long linear facilities, which reduces the impacts of habitat disturbance. The use of reclaimed water and ZLD reduces impacts on fresh water supplies in the region. This reduces potential cumulative impacts to aquatic habitats to less than significant.

The RERC site is being designed to leave room for additional turbines in the future when more electricity is needed for the Riverside Public Utility to serve customers. By designing the site to include additional power generation, another site would not be

disturbed by a new project. When additional turbines are proposed, potential impacts to biological resources would be assessed at the time.

## **RESPONSE TO COMMENTS**

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CURE raised a biological resources comment in their prehearing conference statement. CURE has a concern that the 500-foot buffer recommended by staff is not sufficient to mitigate noise impacts.

Staff analyzed potential noise impacts on nesting sensitive species in the riparian zone along the Santa Ana River. The recreation trail along the river is 750 feet from the construction area and the riparian corridor is further away than the recreation trail. Based on staff's analysis and the modeling results, construction noise at the recreation trail would be approximately 51 dB(A). This noise level is below the level research has shown to change wildlife behavior. See Section A above and the **Noise and Vibration Section** of staff's analysis for a complete discussion.

## **CONCLUSION**

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Construction and operation of the RERC, implementing the following Conditions of Exemption, would result in less than significant impacts to biological resources.

## **CONDITIONS OF EXEMPTION**

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### **COMPLIANCE WITH THE AVIAN POWER LINE INTERACTION COMMITTEE GUIDELINES**

**BIO-1** The project owner shall design, install and maintain transmission lines and all electrical components in accordance with the Avian Power Line Interaction Committee, *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996* to reduce the likelihood of electrocutions of large birds.

**Verification:** No fewer than 60 days prior to the start of site mobilization the project owner shall submit to the CPM written verification that the transmission line design meets APLIC guidelines.

### **COMPLIANCE WITH THE WESTERN RIVERSIDE COUNTY MULTIPLE SPECIES HABITAT CONSERVATION PLAN (WRC MSHCP)**

**BIO-2** The project owner must provide written verification to the Compliance Project Manager (CPM) that the project has purchased a minimum of 12 acres of credit at the current fee level adopted by Riverside County for the Western Riverside County Multiple Species Habitat Conservation Plan prior to the start of any project-related construction activities.

**Verification:** No fewer than 60 days prior to any project-related site mobilization activities, the project owner must provide written verification to the CPM that the project has provided the required habitat compensation for the Riverside Energy Resource

Center project to the Western Riverside County Regional Conservation Authority, including a description of how the habitat compensation funds will be utilized.

## **TAKE AVOIDANCE AND MINIMIZATION MEASURES**

**BIO-3** The biological monitor shall complete the following measures:

1. Two preconstruction surveys for burrowing owls shall be completed; the first at least 14 days prior to site mobilization and the second 48 hours prior to site mobilization. If burrowing owls are present on the site or along the linear facilities then the California Department of Fish and Game (CDFG) guidelines (1995) shall be implemented prior to the initiation of ground disturbing activities;
2. If one way doors are used to exclude burrowing owls, the burrows shall be monitored and hand excavated to ensure the individual has evacuated the burrow prior to ground disturbing activities.
3. At least two artificial burrows shall be constructed in the slope around the site, with an additional two artificial burrows for each active burrow used by a wintering or nesting burrowing owl;
4. A preconstruction survey immediately prior to ground disturbing activities and boulder removal to ensure clearance of sensitive species. A biological monitor shall be present during boulder removal;
5. Construction activities shall maintain a 500 foot setback from the riparian corridor during the least Bell vireo's nesting season;
6. Environmental awareness training of all construction personnel to recognize sensitive habitat areas and sensitive species;
7. Species specific avoidance and take minimization measures shall be implemented 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 US Fish and Wildlife Service. The Energy Commission shall be notified prior to measures being implemented; and
8. The applicant shall prepare an end of construction report that discusses sensitive species encountered, monitoring performed, mitigation measures implemented, and the success of those measures.

The written results of the above activities 1 through 7 shall be submitted to the CPM within 14 days of the start of site mobilization. Information including but not limited to when surveys were completed, what was observed, and any additional follow up measures shall be reported. If sensitive species are found on the project site then a report on the mitigation measures implemented and the results of the measures shall be provided to the CPM within 14 days of completion. The close of construction report (number 8) shall be submitted at the same time the

report is submitted to the Western Riverside County Multiple Species Habitat Conservation Plan.

## REFERENCES

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# CULTURAL RESOURCES

Testimony of Dorothy Torres

## INTRODUCTION

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The cultural resources section identifies potential impacts of the proposed Riverside Energy Resource Center (RERC) to cultural resources. Staff considers the realm of potential “cultural resources” to include anything created or affected by human beings. The term “cultural resources” as defined in law includes buildings, sites, structures, objects, and historic districts. If it appears that a project can not avoid a potential cultural resource, the cultural resources must be evaluated for eligibility to the California Register of Historic Resources (CRHR). The primary purpose of the cultural resources analysis is to ensure that all potential impacts are identified, and that conditions of exemption are set forth that ensure impacts to eligible cultural resources are mitigated below a level of significance under the California Environmental Quality Act (CEQA).

Energy Commission staff designated all of the CEQA checklist items for cultural resources as “less than significant with mitigation incorporation.” A brief cultural overview of the project is provided, as are comments regarding selected CEQA checklist items with respect to cultural resources.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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The following laws, ordinances, regulations, standards, and policies (LORS) have been identified by staff as relevant to assessing the significance of the impacts from the proposed project.

### STATE

- California Code of Regulations, Title 14, section 4852 defines the term "cultural resource" to include buildings, sites, structures, objects, and historic districts.
- Public Resources Code, Section 5024.1 establishes a California Register of Historic Places; determines significance of and defines eligible resources.
- Public Resources Code section 5097.5 identifies any unauthorized removal or destruction of historic resources on sites located on public land as a misdemeanor. Public Resources Code section 5097.99 also prohibits obtaining or possessing Native American artifacts or human remains taken from a grave or cairn and establishes the penalty for possession of such artifacts with intent to sell or vandalize them as a felony. Public Resources Code Section 5097.98 defines procedures for the notification of discovery of Native American artifacts or remains. Public Resources Code section 5097.991 states that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated.
- Public Resources Code section 21083.2 states that the lead agency determines whether a project may have a significant effect on “unique” archaeological resources; if so, an EIR shall address these 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, mitigation measures shall be required as prescribed in this section. The section discusses excavation as mitigation; limits the Applicant's cost of mitigation; sets time frames for excavation; defines "unique and non-unique archaeological resources" and provides for mitigation of unexpected resources.

- Public Resources Code section 21084.1 indicates that a project may have a significant effect on the environment if it causes a substantial adverse change in the significance of a historic resource. The section further defines a "historic resource" and describes what constitutes a "significant" historic resource.
- Government Code section 37361 (b) allows the legislative body of a city to make special provisions for cultural resources identified as having special character or special historical or aesthetic interest or value.
- CEQA Guidelines, Title 14, California Code of Regulations, section 15126.4(b), prescribes the manner of maintenance, repair, stabilization, restoration, conservation, or reconstruction as mitigation of a project's impact on a historical resource; discusses documentation as a mitigation measure; 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 is not feasible. Data recovery must be conducted in accordance with an adopted data recovery plan.
- CEQA Guidelines, section 15064.5 defines the term "historical resources," explains when a project may have a significant effect on historic resources, describes CEQA's applicability to archaeological sites, and specifies the relationship between "historical resources" and "unique archaeological resources." Subsection (f) requires that the lead agency make provisions for historical or unique archaeological resources accidentally discovered during construction.

## **LOCAL**

The City of Riverside adopted Title 20 of the Municipal Code in 1996. The purpose of the ordinance is to promote the general welfare and ensure the preservation of significant cultural resources. The ordinance provides a definition of terms and pursuant to Article VII of the City Charter creates a Cultural Heritage Board. The ordinance also creates criteria for landmarks, structures of merit, an historic district designation, and procedures for listing or appealing decisions of the Cultural Heritage Board (City 2004a).

Title 20 ensures that whenever a project conducted by the City threatens to impact a cultural resource listed as a landmark, structure of merit or historic district, notice must be given to the Cultural Heritage Board so that any necessary recommendations can be made early in the decision making process (City 2004a).

## **SETTING**

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The proposed power plant, water lines, gas line and electrical transmission line will be located in the City of Riverside. The primary source of reclaimed water for the project will be the City of Riverside's Wastewater Treatment Plant (WWTP). The WWTP is

adjacent to the west boundary of the proposed plant location. A Zero Liquid Discharge system (ZLD) will be utilized to reclaim most of the plant effluents and evaporate the sludge into a solid waste or a liquid brine. A potable water line will extend 60 feet from the southwest corner of the project to the City water supply on Acorn Street. The transmission line will extend 1.75 miles to a tie in approximately 400 feet outside the Mountainview Substation (RERC 2004a, p. 31).

The transmission line route is composed of a wide variety of uses. A portion of the route along Jurupa Avenue includes existing transmission lines on both sides of the street. Numerous power lines are visible along most of the route. In addition, types of buildings along the route include commercial, manufacturing and residential. Many of the buildings have had modifications and reflect building styles from the early 1900s to the present. Portions of the route include sidewalks and various types of fencing. The route also includes vacant lots. Fencing along the transmission line route is intermittent and is composed of a great many styles and materials.

The City of Riverside General Plan classifies the plant site and a portion of the transmission line route as Industrial/Business Parks for land use. The remainder of the transmission line route from Freemont Street to the Mountainview Substation is classified as Medium High Density Residential land use (RERC 2004a, pp. 115-116).

The area of the proposed RERC is near the Santa Ana River. The geomorphic province where the proposed plant would be situated is located in section of California identified at the Peninsular Ranges (Moratto 1984, p. 7). Rivers of the Peninsular Ranges have been used by Native Americans for thousands of years (Moratto 1984, p. 19). Authorities differ regarding the groups of Native Americans that lived in the location of the proposed project and transmission line (Krober 1925 and Bean 1978, p. 575). Moreover, since the area included several trade routes, it is likely that people from several different groups were frequent visitors (Bean 1978, p. 575). Ordinarily a source of water is likely to have been a location of Native American use or habitation. Ethnographic evidence indicates that a source of permanent water was essential for the location of Serrano villages (RERC 2004a, p.159). Based on the fact that seven previously recorded sites are within ½ mile of the proposed project, it appears that areas near the Santa Ana River have been used by Native Americans (RERC 2004a, p. 165). Groups that may have lived in or used the project and linear area are the Gabrielino/Tongva, Serrano, Cahuilla and Luiseno (RERC 2004a, pp. 159-164). The vicinity of the Santa Ana River would have provided prehistoric peoples with many resources associated with marshes: acorns, sage, yucca, deer, small rodents and chacti (Bean and Charles 1978, p. 539).

Contact with European explorers began for most of the Native American groups in the area late in the 1700s. Although there is information that the Gabrielino may have encountered Europeans as early as the 1500s (Bean and Smith 1978, p. 540). Juan Bautista de Anza crossed the Santa Ana narrows of the Santa Ana River in 1775-76. In 1838, a San Diego merchant named Juan Bandini obtained title to much of the Santa Ana River drainage. He named the land Rancho Jurupa (RERC 2004a, p. 164).

In 1848, Mexico ceded California and gold was discovered causing an influx of population. In 1870, a group of Anglo Investors purchased a considerable amount of

Rancho Jurupa. One square mile of that purchase became the City of Riverside. Irrigation canals were built to divert water from the Santa Ana River, thus initiating the citrus industry in California (RERC 2004a, p. 164). Between 1882 and 1921, several railroads built lines that linked the City of Riverside with large cities around the country.

Evidence of early development can still be seen in the surviving houses built in the 1910s and 1920s on Jurupa Avenue and Florence Street and the barn in the 5000 block of Jurupa Avenue (RERC 2004a, p. 164).

The WWTP was built by the City of Riverside in 1942. After 1945, development in the vicinity of the project continued with primarily commercial businesses accessed by cars and trucks.

## 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.

<b>ENVIRONMENTAL CHECKLIST</b>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>CULTURAL RESOURCES – Would the project:</b>				
A. Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?		X		
B. Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?		X		
C. Disturb any human remains, including those interred outside of formal cemeteries?		X		

## DISCUSSION OF IMPACTS

### A. Effect on Historical Resources: Less than Significant with Mitigation Incorporated

For the purpose of historic assessment, the following buildings, structures and linear features have been determined to be within the Impact Area of the RERC.

#### The Union Pacific Bridge

The Union Pacific Bridge spans the Santa Ana River approximately one-half mile from the project site. The bridge was built in 1904 and at that time it was labeled the largest concrete structure in the world (RERC 2004a). The viaduct is made up of 86-foot span arches. Each arch has a radius of 43.5 feet and is about 39 feet high. The height of the bridge is approximately 55 feet. The bridge was formally recorded as part of the Historic American Engineering Record (HAER), a long range program to document historically significant engineering and industrial works in the United States.

The Union Pacific Bridge was part of a railroad line initiated by Senator William Andrews Clark, nicknamed the "Copper King." The railroad line is now named the Union Pacific Railroad, but is a part of the old San Pedro, Los Angeles and Salt Lake Railroad Company's line from Salt Lake City Utah to the port at San Pedro. The rail line ultimately connected Salt Lake City and Los Angeles and was known as the San Pedro, Los Angeles and Salt Lake Railroad Company. The bridge supported a railroad line that was extremely important for shipping iron ore and coal from Utah and Oranges from the Riverside area. The bridge is still in use by the Union Pacific Railroad (HAER No. CA-123, p.3.)

The project plans to replace existing power poles in the vicinity of the historic bridge. The bridge is located in a setting that includes the river foliage and the Martha McLean-Anza Narrows Park. A paved bike trail runs under a portion of the bridge. Several modern structures are visible from area near the bridge. The setting and feeling of the bridge would be slightly diminished by the change in the power poles, but would not be sufficient to materially impair the significance of the bridge. The project would not cause a significant impact to the bridge.

### **The Union Pacific Railroad, Los Angeles to Salt Lake City Segment**

The portion of the railroad that spans the Union Pacific Bridge that was previously named the Los Angeles and Salt Lake Rail Company and earlier was named the San Pedro, Los Angeles, Salt Lake Railroad Company (SP, LA & SLRR) was incorporated on March 20, 1901. After numerous disputes William Clark sold 50 percent of the SP, LA & SLRR to Edward Henry Harriman of Union Pacific (UP). Construction of the line resumed on July 8, 1903 and was completed January 20, 1905. The UP bought the remaining 50% on April 27, 1921. It was formally merged with UP on January 1, 1988 (HAER No. CA-123, p. 2). The setting and feeling of the Union Pacific Railroad would be slightly diminished by the change in the power poles, but would not be sufficient to materially impair the significance of the Union Pacific Railroad. The project would not cause a significant impact to the Union Pacific Railroad.

### **State Landmark No. 787, De Anza Crossing of the Santa Ana River**

State Landmark No. 787, De Anza Crossing of the Santa Ana River, is commemorated with a marker. The marker identifies the location of De Anza's Crossing of the Santa Ana River on January 1, 1776. The marker is situated in Martha McLean – Anza Narrows Park.

Since State Landmarks from No. 770 onward are automatically listed on the California Register of Historical Resources, the De Anza Crossing of the Santa Ana River is a significant resource. Numerous alterations of the setting of the De Anza Crossing have occurred including the addition of the SP, LA & SLRR and the Union Pacific Bridge, the bicycle trail, as well as some modern structures. The setting and feeling of State Landmark No. 787 would be slightly diminished by the change in the power poles outside of the park, but would not be sufficient to materially impair the significance of the landmark. The project would not cause a significant impact to the De Anza Crossing of the Santa Ana River.

### **Martha McLean – Anza Narrows Park**

The Martha McLean – Anza Narrows Park contains State Landmark No. 787, De Anza Crossing of the Santa Ana River, but needs to be considered as a resource with its own merit. The park appears to date from the 1930s with many modern improvements (RERC 2004a, p. 171). Additions to the park since the 1930s including paved roads and trails, playground equipment and picnic facilities make it unlikely that the park would meet the criteria for eligibility to the California Register of Historic Resources (CRHR). Although it is unlikely that the park is eligible for the CRHR, for the purposes of this analysis, the park will be assumed to be eligible for the CRHR. Alterations to the park have been previously mentioned. The park also has a new gate and entrance sign. Curbs have been added to the roadway in front of the park since the 1930s. Wooden power poles and other more modern buildings have altered the setting and feeling of the park. The setting and feeling of the Martha McLean – Anza Narrows Park would be slightly diminished by the change in the power poles, but would not be sufficient to materially impair the assumed significance of the park. The project would not cause a significant impact to the Martha McLean – Anza Narrows Park if it were a resource eligible for the CRHR.

### **Wastewater Treatment Plant**

The WWTP built in 1942 is located at the western boundary of the proposed project site. The older portion of the WWTP appears to be well preserved, however it is surrounded by more recent structures (RERC 2004a, p. 169). The reclaimed water line will connect to the WWTP at a new portion of the plant. The WWTP was not evaluated as a resource for the CRHR. For the purposes of this analysis, the WWTP will be assumed to be eligible for the CRHR. The new power plant will alter the setting and feeling of the WWTP. As previously noted, modern buildings now occupy the area between the proposed power plant and the WWTP. The setting and feeling of the WWTP would be slightly diminished by the construction of the new power plant, but would not be sufficient to materially impair the assumed significance of the WWTP. The project would not cause a significant impact to the WWTP if it were a resource eligible for the CRHR.

### **Buildings**

Nine of the eleven buildings in the projects potential impact area are more than 45 years old are located along Jurupa Avenue (Table 1). A house on Florence Street was built in 1915 and a building on Sheppard Street is more than 45 years old. Four of the houses identified by the applicant were also listed on the City of Riverside Historic Resource Property Information Data Base (RERC 2004e). All the buildings listed by the City of Riverside are presumed to be significant by the lead agency pursuant to CEQA Guidelines section 15064.5 (a) (2).

A search of the Cities' Property Information Data Base identified properties over 45 years old (Table 1). Although impacts are unlikely, buildings will be observed to ensure that they are avoided and there are no impacts from construction during archaeological monitoring for power pole installation.

**Cultural Resources Table 1- Buildings over 45 Years of Age**

<b>45 Years or Older</b>	<b>Listed by the City</b>	<b>Identified by the Applicant</b>
6344 Jurupa Avenue	X	
5971 Jurupa Avenue	X	
5876 Jurupa Avenue	X	X
5826 Jurupa Avenue	X	
6027 Sheppard Street	X	
7297 Jurupa Avenue		X
6091 Jurupa Avenue		X
5868 Jurupa Avenue	X	X
6019 Florence Street	X	X
5748 Jurupa Avenue	X	X
5000 Block Jurupa Avenue (approx) Barn		X

**Existing Transmission Line**

Transmission line and power poles will be replaced as a necessary part of the project. The portion of the line that is situated along Payton Avenue has poles that are more than 45 years old. Only four poles out of 51 are old enough to be considered as a potential historical resource (RERC 2004e). The portion of the transmission line that is more than 45 years old is very small in relation to the rest of the resource. It does not appear likely that this cultural resource would meet the criteria for eligibility to CRHR, therefore although there would be an impact to the existing line and poles, the impact is not significant.

**B. Cause a Change in Significance of an Archaeological Resource: Less than Significant with Mitigation Incorporated**

Thirteen cultural resource surveys have been conducted within a one-half mile radius of the project. Seven archaeological sites were identified as a result of those surveys. One additional archaeological site was identified as a result of the cultural resources survey for the RERC (RERC 2004a, p. 165).

Since prehistoric sites are often discovered near rivers, it is possible that buried archaeological sites may be discovered. Although considerable disturbance has previously occurred at the plant location, areas that are composed of native soil may yield artifacts or archaeological sites (RERC 2004a, p.172).

Public Resources Code section 15064.5 (f) directs the lead agency to make provisions for historical or unique archaeological resources that are inadvertently discovered during project construction.

The applicant provided recommendations for mitigation. Staff concurs with most of the recommendations, but will expand upon or make additions to the applicant's recommendations. Staff's additional recommendations will be sufficient to ensure that impacts to archaeological discoveries would be mitigated to a level of less than significant. Mitigation measures suggested by the applicant and recommended by staff are provided as conditions of exemption.

## **Avoidance**

The applicant recommends that careful placement of power poles be used to lessen the visual impact of new power poles to the Martha McLean-Anza Narrows Park (RERC 2004a, p.173). (See discussion of Martha McLean-Anza Narrows Park) Staff recommends that during monitoring for installation of power poles, spot checks of buildings over 45 years old be completed to ensure there have not been any impacts. The spot checks during power pole installation will ensure avoidance and should be completed once a week at a minimum.

## **Training**

The applicant recommends a training class to educate supervisors on the importance of cultural resources and the legal basis for their protection. Moreover, the applicant recommends that the construction crew be informed regarding the possible cultural resources that might be encountered during ground disturbance. Staff recommends thorough training for both supervisors and construction crew regarding the resource values involved and of the regulatory protection afforded to the resources (RERC 2004a, p. 173).

In addition to the applicant's recommendations, staff recommends that the Cultural Resources Specialist (CRS) develop a comprehensive training program that includes the issues raised in working near historic buildings and possible identification of cultural resources. During the training the construction workers should be advised of penalties in law for collecting artifacts.

The training program should be conducted prior to beginning of ground disturbance. The CRS should also provide samples of artifacts that might be encountered in the area of the project. The samples should include historic and prehistoric artifacts. At a minimum, photos of artifacts from the local area should be provided.

## **Cultural Resources Monitoring**

The applicant recommends that cultural resources monitoring be conducted in areas that are sensitive for cultural resources. The applicant also recommends that an archaeologist who meets the Secretary of Interiors Standards evaluate the potential to discover cultural resources to ensure only sensitive areas are monitored. If discoveries are significant, then mitigation such as excavation and data recovery may be necessary (RERC 2004a, p. 173). Staff recommends that a Cultural Resources Specialist shall be a member of the Register of Professional Archaeologists with a minimum of three years of field work and lab experience in California and a minimum of one year of field work experience in the vicinity of Riverside. The CRS should also be qualified to evaluate the significance of the deposits, plan site evaluation and mitigation activities, and write a final report documenting the project. The CRS shall oversee or conduct the recommended construction monitoring. A CRS and monitor can be the same person, if properly qualified. Qualifications for monitors are provided in Condition of Exemption **CUL-1**.

The applicant recommends that in the event of a discovery, the cultural monitor should have the authority to temporarily halt construction. Staff asserts that in the event of a

discovery, construction would need to remain halted in the vicinity of a discovery until any necessary mitigation has been completed.

### **Construction Site Assessment**

The applicant recommends a preliminary assessment of the construction site for the presence of cultural resources. Initial ground disturbance and excavation should then be observed by the CRS. After the CRS has examined the excavated soils, he/she should determine the necessary level and locations of monitoring and provide that information to the City of Riverside Historic Preservation Specialist for approval. Staff recommends that the CRS assess the project site for the presence of native sediments. Ground disturbance at the project site shall be monitored where the disturbance occurs in native sediments. Cultural resources monitoring should not continue in locations where excavation has reached bedrock.

### **Native American Monitor**

The applicant has not made any recommendation regarding Native American monitoring. Ten individuals or groups of Native American are listed on the contact list provided by the Native American Heritage Commission. The project contacted everyone on the list and received two responses as of February 6, 2004. The Augustine Band of Mission/Cahuilla Indians recommends that additional tribes be contacted and that Native American monitoring should occur on the project. The Agua Caliente Band of Cahuilla Indians asked for a copy of the final cultural resources report to be included the Agua Caliente Cultural Register (RERC 2004a, p. 167). Staff recommends that a Native American monitor be retained to monitor in locations where Native American artifacts may be discovered, but will only require that a Native American monitor be retained if artifacts are discovered.

### **Discoveries**

If archaeological materials are discovered, the applicant recommends that construction be halted and an excavation plan prepared. The discovery shall then be recorded on Department of Parks and Recreation Primary Record forms (Form DPR 523). The applicant also recommends avoidance if possible, further evaluation, curation; if necessary, and preparation of a final report (RERC 2004a, p. 173).

The City of Riverside provides for recognition and protection of cultural resources in Title 20 of the Municipal Code. Section 20.20.090 states that "Whenever any project to be carried out by the City may have an impact on a designated landmark, reasonable notice shall be given to the Cultural Heritage Board by the City department or division responsible for the project, so that the Cultural Heritage Board may review and make recommendation concerning the project early in the decision making process." In addition to the City's requirement, if an archaeological site is discovered, the discovery shall be reported to the City of Riverside Historic Preservation Specialist. To ensure compliance with CEQA, if an archaeological site is discovered, it must be evaluated for eligibility to the CRHR. If the site is determined eligible, then either avoidance or data recovery would be necessary. If materials are collected (as determined by the research design required by Condition of Exemption **CUL-3**), they shall be curated in compliance with this document.

## **Curation**

The City of Riverside Municipal Museum would handle curation responsibilities in the event of an archaeological find. In addition to the applicant's recommendations, staff recommends that items be curated in accordance with the State Historical Resources Commission's, "Guidelines for the Curation of Archaeological Collections" and Title 36 of the Code of Federal Regulations, Part 79, and that any necessary fees shall be paid by the applicant.

## **Cultural Resources Report**

The applicant proposes providing a "Report of Findings." The report shall be prepared at the end of the project in accordance with Archaeological Resource Management Reports (ARMR): Recommended Contents and Format. The final cultural resources report would address **all** cultural resources activities conducted for the project, **whether or not there was a discovery**. In the field of archaeology, identifying the methods used to determine that nothing was present in a particular location is just as important as identifying the methods used to determine that there is something present. Archaeologists or historians who obtained information from the California Historic Information System (CHRIS) signed a document stating that if any reports are written as a result of work completed for the project area and research was done at the CHRIS, a copy of that report would be provided to the CHRIS.

## **C. Disturb Human Remains: Less than Significant with Mitigation Incorporated**

There is no record of interred human remains that would be disturbed by the proposed project. Public Resources Code section 15064.5 (f) instructs lead agencies to make provisions for historical or unique archaeological resources that are discovered during construction. In the event that interred human remains are encountered during project ground disturbance, mitigation will be achieved by following state law that requires notification of the county coroner and additional subsequent requirements. If the county coroner determines that human remains are Native American in origin, the Native American Heritage Commission will be notified and a Most Likely Descendant will be referred to the project to make recommendations to the property owner regarding the appropriate treatment of the remains and associated grave goods.

The applicant has stated that a burial plan will be prepared as part of any excavation plan (RERC 2004a, p. 173). Staff cautions the applicant that CEQA should be reviewed to identify the roles of both the lead agency and Native American groups prior to preparing a burial plan.

## **CUMULATIVE IMPACTS**

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Cumulative impacts to cultural resources in the project vicinity may occur if subsurface archaeological deposits (both prehistoric and historic) and the setting of historic structures are affected by other projects in the same area.

Should development be initiated in the area, project proponents for future projects can mitigate impacts to as yet undiscovered subsurface archaeological sites to less than

significant levels. The WWTP adjacent to the RERC plans to expand. Since the impacts from the RERC will be mitigated and impacts from the WWTP can be mitigated, the incremental effect will not be cumulatively considerable. Impacts can be mitigated by requiring construction monitoring, evaluation of resources discovered during monitoring, and avoidance or data recovery for resources evaluated as significant (eligible for the CRHR or NRHP). Impacts to human remains can be mitigated by following state law.

## CONCLUSIONS

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Based on the discussion above, and in conjunction with the mitigation set forth and agreed to by the applicant, the proposed project will not cause any significant adverse impact to any known cultural resources. Potential impacts to cultural resources that may be discovered during ground disturbance will be mitigated to below a level of significance by mitigation measures outlined in this document and provided in the conditions of exemption.

## PROPOSED CONDITIONS OF EXEMPTION

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**CUL-1** Prior to the start of ground disturbance, the project owner shall obtain the services of a **Cultural Resources Specialist (CRS)**, and one or more alternates, if alternates are needed, to manage all monitoring, mitigation and curation activities. The CRS may elect to obtain the services of **Cultural Resource Monitors (CRMs)** and other technical specialists, if needed, to assist in monitoring, mitigation and curation activities. The project owner shall ensure that the CRS evaluates any cultural resources that are newly discovered or that may be affected in an unanticipated manner for eligibility to the California Register of Historic Resources (CRHR). No ground disturbance shall occur prior to City of Riverside Historic Preservation Specialist approval of the CRS, unless specifically approved by the City of Riverside Historic Preservation Specialist.

### CULTURAL RESOURCES SPECIALIST

The resume for the CRS and alternate(s) shall include information demonstrating that the minimum qualifications specified in the U.S. Secretary of Interior Guidelines, as published in the Code of Federal Regulations, 36 CFR Part 61 are met. In addition, the CRS shall have the following qualifications:

1. The technical specialty of the CRS shall be appropriate to the needs of the project and shall include a background in anthropology, archaeology, history, architectural history or a related field; and
2. At least three years of archaeological or historic, as appropriate, resource mitigation and field experience in California.

The resume of the CRS shall include the names and telephone numbers of contacts familiar with the work of the CRS on referenced projects, and shall demonstrate that the CRS has the appropriate education and experience to accomplish the cultural resource tasks that must be addressed during ground disturbance, grading, construction and

operation. In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the City of Riverside Historic Preservation Specialist that the proposed CRS or alternate has the appropriate training and background to effectively implement the conditions of exemption.

### **CULTURAL RESOURCES MONITOR**

CRMs shall have the following qualifications:

1. a BS or BA degree in anthropology, archaeology, historic archaeology or a related field and one year experience monitoring in California; or
2. an AS or AA degree in anthropology, archaeology, historic archaeology or a related field and four years experience monitoring in California; or
3. enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historic archaeology or a related field and two years of monitoring experience in California.

### **CULTURAL RESOURCES TECHNICAL SPECIALISTS**

The resume(s) of any additional technical specialists, e.g. historic archeologist, historian, architectural historian, physical anthropologist shall be submitted to the City of Riverside Historic Preservation Specialist for approval.

The project owner shall submit the resume for the CRS, and alternate(s) if desired, to the City of Riverside Historic Preservation Specialist for review and approval at least 45 days prior to the start of ground disturbance.

**Verification:** At least 35 days prior to ground disturbance, the project owner shall submit the resume of the proposed CRS for review and approval to the City of Riverside Historic Preservation Specialist. At least 10 days prior to a termination or release of the CRS, the project owner shall submit the resume of the proposed new CRS to the City of Riverside Historic Preservation Specialist for review and approval.

At least 20 days prior to ground disturbance, the CRS shall provide a letter naming anticipated CRMs for the project and stating that the identified CRMs meet the minimum qualifications for cultural resource monitoring required by this condition. If additional CRMs are obtained during the project, the CRS shall provide additional letters to the City of Riverside Historic Preservation Specialist identifying the CRMs and attesting to their qualifications, at least five days prior to the CRM beginning on-site duties. At least 10 days prior to beginning tasks, the resume(s) of any additional technical specialists shall be provided to the City of Riverside Historic Preservation Specialist for review and approval.

At least 10 days prior to the start of ground disturbance, the project owner shall confirm in writing to the City of Riverside Historic Preservation Specialist, that the approved CRS will be available for on-site work and is prepared to implement the cultural resources conditions of exemption.

**CUL-2** Prior to the start of ground disturbance, the project owner shall provide the CRS and the City of Riverside Historic Preservation Specialist with maps and

drawings showing the footprint of the power plant and all linear facilities. The City of Riverside Historic Preservation Specialist shall review submittals and in consultation with the CRS approve those that are appropriate for use in cultural resources planning activities.

At a minimum, the CRS shall consult weekly with the project construction manager to confirm area(s) to be worked during the next week, until ground disturbance is completed.

No ground disturbance shall occur prior to City of Riverside Historic Preservation Specialist approval of maps and drawings, unless specifically approved by the City of Riverside Historic Preservation Specialist.

**Verification:**

1. At least 30 days prior to the start of ground disturbance, the project owner shall submit the subject maps and drawings to the CRS and City of Riverside Historic Preservation Specialist.
2. If there are changes to any project related footprint, revised maps and drawings shall be provided at least 10 days prior to start of ground disturbance for those changes.

**CUL-3** The project owner shall ensure that:

1. All cultural resources encountered shall be recorded on a Department of Parks and Recreation (DPR) form 523 and mapped (may include photos). In addition, all archaeological materials collected as a result of the archaeological investigations (survey, testing, and data recovery) shall be curated in accordance with State Historical Resources Commission "Guidelines for the Curation of Archaeological Collections," into a retrievable storage collection in a public repository or museum. The public repository or museum must meet the standards and requirements for the curation of cultural resources set forth at Title 36 of the Federal Code of Regulations, Part 79. Copies of any DPR forms shall be provided to the City of Riverside, Historic Preservation Specialist.
2. All applicable curation fees are paid by the project owner, and any agreements concerning curation are retained and available for audit for the life of the project.
3. The CRS prepares and presents a training program (video or on-site presentation) to all employees hired during periods of ground disturbance. The training shall include applicable laws and at a minimum photos of artifacts that might be encountered in the local area.
4. If there is a discovery and a research design has not been approved by the City of Riverside Historic Preservation Specialist, then construction will remain halted until the project area research design is approved. A research design that includes a discussion of research questions and testable hypotheses applicable to the project area would be prepared for any resource where data recovery is required. The research design shall contain lists of

artifacts and other cultural materials that would be collected because they contribute information to answer the research questions. (A research design may be prepared and reviewed at any time prior to a discovery).

**Verification:** At least one week prior to initiating ground disturbance, the project owner shall provide a letter to the City of Riverside Historic Preservation Specialist that states the project owner's intention to comply with each of the four elements of this condition.

At least one-week prior to beginning an archaeological excavation, the project owner shall submit a research design, prepared by the CRS to the City of Riverside Historic Preservation Specialist for approval.

**CUL-4** After all ground disturbance has been completed, the project owner shall submit the Cultural Resources Report (CRR) to the City of Riverside Historic Preservation Specialist for approval. The CRR shall be written by the CRS and shall be provided in the Archaeological Resource Management Reports (ARMR) format. The CRR shall report on all field activities including dates, times and locations, findings, samplings and analysis. All survey reports, Department of Parks and Recreation (DPR) 523 forms and additional research reports not previously submitted to the California Historic Resource Information System (CHRIS) and the State Historic Preservation Officer (SHPO) shall be included as an appendix to the CRR. If the ARMR reports have previously been sent to the CHRIS, then receipt letters from the CHRIS shall be included in an appendix.

**Verification:** The project owner shall submit the CRR to the City of Riverside Historic Preservation Specialist within 90 days after completion of ground disturbance (including landscaping). Within 10 days after City of Riverside Historic Preservation Specialist approval, the project owner shall provide documentation to the City of Riverside Historic Preservation Specialist that copies of the CRR have been provided to the SHPO, the CHRIS, Agua Caliente Band of Cahuilla Indians and the curating institution (if archaeological materials were collected). Letters acknowledging receipt of the City of Riverside Historic Preservation Specialist approved report from the CHRIS and SHPO are acceptable documentation.

**CUL-5** The project owner shall ensure that the CRS, alternate CRS, or CRMs shall monitor ground disturbance full-time wherever native sediments would be disturbed at project site. Cultural resources monitoring shall not continue below bed rock.

After overburden has been removed in locations where power poles will be installed, the CRS shall examine the soils and determine whether native sediment will be disturbed. If native sediments will be disturbed, cultural resources monitoring shall be conducted full-time.

CRMs shall keep a daily log of any monitoring or cultural resource activities and the CRS shall prepare a weekly summary report on the progress or status of cultural resources-related activities. The CRS may informally discuss cultural resource monitoring and mitigation activities with the City of Riverside Historic Preservation Specialist and Energy Commission technical staff.

Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these conditions of exemption.

If Native American artifacts are discovered, a Native American monitor shall be obtained to monitor ground disturbance. Informational lists of concerned Native Americans and guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area that shall be monitored.

**Verification:** During the ground disturbance phases of the project, the project owner shall ensure that the CRS provides to the City of Riverside Historic Preservation Specialist copies of the weekly summary reports prepared by the CRS regarding project-related cultural resources monitoring. Copies of daily logs shall be retained and made available for audit by the City of Riverside Historic Preservation Specialist.

If Native American artifacts are discovered, the project owner shall send notification to the City of Riverside Historic Preservation Specialist identifying the person(s) retained to conduct Native American monitoring. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the City of Riverside Historic Preservation Specialist and the Historic Preservation Specialist will either identify potential monitors or will allow ground disturbance to proceed without a Native American monitor.

**CUL-6** The project owner shall grant authority to halt construction to the CRS, alternate CRS and the CRMs in the event previously unknown cultural resource sites or materials are encountered, or if known resources may be impacted in a previously unanticipated manner (discovery). Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS.

In the event cultural resources are found or impacts can be anticipated, construction shall be halted or redirected and shall remain halted or redirected until all of the following have occurred:

1. The CRS has notified the project owner, and the City of Riverside Historic Preservation Specialist has been notified within 24 hours of the discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the discovery (or changes in character or attributes), the action taken (i.e. work stoppage or redirection), a recommendation of eligibility and recommendations for mitigation of any cultural resources discoveries whether or not a determination of significance has been made.
2. The CRS and the project owner have consulted with the City of Riverside Historic Preservation Specialist and the City of Riverside Historic Preservation Specialist has concurred with the recommended eligibility of the discovery and the proposed data recovery or other mitigation; and

3. Any necessary data recovery and mitigation has been completed.

**Verification:** At least 30 days prior to the start of ground disturbance, the project owner shall provide the City of Riverside Historic Preservation Specialist, and the CRS with a letter confirming that the CRS, alternate CRS and CRMs have the authority to halt construction activities in the vicinity of a cultural resource discovery, and that the project owner shall ensure that the CRS notifies the City of Riverside Historic Preservation Specialist within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.

**CUL-7** Prior to beginning ground disturbance or construction within 100 feet of any cultural resources listed as a landmark, structure of merit or designated as an historic district by the City of Riverside; the project owner shall notify the City of Riverside's Cultural Heritage Board.

**Verification:** At least thirty days prior to ground disturbance within 100 feet of any cultural resources listed by the City of Riverside, the project owner shall notify the Cultural Heritage Board and City of Riverside in writing. The project may not proceed until approval to continue work is received from the City of Riverside. Within 14 days of receiving documentation allowing the project to proceed with construction, the project owner shall provide the City of Riverside Historic Preservation Specialist with copies of those documents.

## REFERENCES

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- Krober, A.L. *Handbook of the Indians of California* 1925: Dover Publications, Inc. New York.
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- 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: Applicant's Phase I Environmental Site Assessment. Submitted to the California Energy Commission on June 8, 2004.

RERC (Riverside Energy Resource Center) 2004c: Applicant's Data Responses 1-72. Submitted to the California Energy Commission on June 14, 2004.

# ENERGY RESOURCES

Testimony of Kevin Robinson and Steve Baker

## INTRODUCTION

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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

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

## SETTING

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Riverside Public Utilities (RPU) proposes to construct and operate the 96 MW (nominal net output) simple cycle RERC power plant, providing peaking power to the RPU power grid. (Note that this nominal rating is based upon preliminary design information and generating equipment manufacturers' guarantees. The project's actual maximum generating capacity will differ from, and may exceed, this figure.) Power from the facility will supply the internal needs of the City of Riverside during summer peak electrical demands and will serve the City's minimum emergency loads in the event RPU is islanded from the external transmission system. No power from RERC will be exported outside of the City of Riverside (RERC 2004a, SPPE §§ 1.2.2, 2.1, 7.1). The RERC will consist of two General Electric LM6000PC NxGen Sprint combustion turbine generators (CTG) rated at 50 MW each. The CTG will utilize an electric water chiller at its inlet to maintain output and efficiency during periods of high ambient temperatures. The CTG will utilize water injection for power augmentation and to reduce the formation of NOx (RERC 2004a, SPPE §§ 2.2.2, 2.5, 2.5.1, 3.1). The stacks will have a selective catalytic reduction system to further control the emissions of NOx from the plant (RERC 2004a, SPPE §§ 1.2.2, 2.5, 2.5.2).

## IMPACTS

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### BACKGROUND

RPU is applying for a Small Power Plant Exemption (SPPE) in order to exempt the RERC 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 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, the RERC will burn natural gas at a nominal rate up to 855 million Btu (MMBtu) per hour Lower Heating Value (LHV) (RERC 2004a, SPPE § 3.1, Table 2.5-2, Appendix 6.1). 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 38.3 percent LHV with the combustion turbines operating at full load (RERC 2004a, SPPE § 3.1).

The applicant has described its source of natural gas for the RERC (RERC 2004a, SPPE §§ 1.2.5, 2.6). The project will burn natural gas delivered to the site by Southern California Gas Company (SoCal) via a new connection to SoCal's gas transmission line that passes next to the northeast corner of the project site boundary (RERC 2004a, SPPE §§ 1.2.5, 2.6). The SoCal system is capable of delivering the required quantity of gas to the RERC (RERC 2004c, Data Response 42). 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.

Natural gas fuel will be supplied to the project by a new 140 foot natural gas service line connected to SoCal's existing transmission pipeline (RERC 2004a, SPPE §§ 1.2.5, 2.6). This interconnection can be expected to adequately serve the project. 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 the RERC.

### **Alternatives To Reduce Wasteful, Inefficient And Unnecessary Energy Consumption**

The RERC 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 (RERC 2004a, SPPE § 1.2.2, 2.1, 2.5, 2.5.1, 7.1). The RERC will be configured as two simple cycle power plants in parallel, in which electricity is generated by two natural gas turbine generators (RERC 2004a, SPPE §§ 1.2.2, 2.5, 2.5.1, 3.1). This configuration, with its short start-up time and fast ramping<sup>1</sup> 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 percent 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 will employ two General Electric LM6000PC NxGen Sprint gas turbine generators (RERC 2004a, SPPE §§ 2.5, 2.5.1, 3.1, Table 2.5-1, Appendix 6.1). The LM6000PC NxGen Sprint gas turbine to be employed in the RERC represents one of the most modern and efficient such machines now available. The Sprint version of this machine is nominally rated at 50 MW and 40.5 percent efficiency LHV at ISO<sup>2</sup> conditions (GTW 2004). Alternative machines that can meet the project's objectives are the GTX100 and FT8 TwinPac which, like the LM6000, are aeroderivative machines, adapted from Siemens Demag Delaval Turbomachinery (Siemens) and Pratt & Whitney aircraft engines, respectively.

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<sup>1</sup> Ramping is increasing and decreasing electrical output to meet fluctuating load requirements.

<sup>2</sup> International Standards Organization (ISO) standard conditions are 15°C (59°F), 60 percent relative humidity, and one atmosphere of pressure (equivalent to sea level).

The Siemens GTX100 gas turbine generator in a simple cycle configuration is nominally rated at 45 MW and 37 percent LHV at ISO conditions (GTW 2004).

Another alternative is the Pratt & Whitney FT8 TwinPac gas turbine generator in a simple cycle configuration that is nominally rated at 51 MW and 38.4 percent LHV at ISO conditions (GTW 2004).

Machine	Generating Capacity (MW)	ISO Efficiency (LHV)
<b>GE LM6000PC Sprint</b>	<b>50</b>	<b>40.5 %</b>
SIEMENS	45	37.0 %
P & W FT8 TwinPac	51	38.4 %

Source: GTW 2004

The LM6000PC NxGen Sprint is further enhanced by the incorporation of spray intercooling (thus the name, SPRay INTERcooling). This takes advantage of the aeroderivative machine's two-stage compressor.<sup>3</sup> 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 (RERC 2004a, 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, 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 over two-thirds of the total operating costs of a fossil-fired power plant (Power 1994). In order to maintain reasonable costs to its

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<sup>3</sup> 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.

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.<sup>4</sup> 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.

RERC proposes to employ electric chilling to cool the combustion turbine inlet air (RERC 2004a, 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**

In conclusion, the project configuration (simple-cycle) and generating equipment (LM6000PC NxGen Sprint gas turbines) chosen appear to represent an effective means of satisfying the project objectives. Short start-up time and fast ramping capability associated with this configuration will serve the project in meeting its objective of providing peaking power to RPU's customers. Energy Commission staff believes the RERC does not constitute a significant impact on energy resources because there are no feasible alternatives that could satisfy the project's objectives and significantly reduce energy consumption.

## **CUMULATIVE IMPACTS**

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

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<sup>4</sup> 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.

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 RERC 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.

## **RESPONSE TO COMMENTS**

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The following is the comment made on the **Energy Resources** portion of the Draft Initial Study and staff's response to this comment:

### **California Unions for Reliable Energy:**

#### **Page 8, section G: Generating Capacity of Units 1 and 2 Exceeds 100 MW**

The electricity generating capacity of the Project as described in the staff's initial study may exceed 100 MW, rendering the Project ineligible for an SPPE under Cal. Pub. Resources Code section 25541.

**Staff's Response:** Energy Commission staff assesses the generating capacity of a thermal power plant pursuant to Title 20, California Code of Regulations, section 2003. The method of calculation, and the assumptions made to determine if the generating capacity falls within the SPPE process (up to 100 MW), are described below.

The evaluation process begins with a determination of the Gross Rating of the prospective combustion turbine generators. This value corresponds to the maximum capacity of the system, unconstrained by such items as controls. The Gross Rating is the gross generating capacity of the turbines at site design ambient conditions. Site design ambient conditions are the average temperature, pressure, and relative humidity during the intended operating mode. The assumptions used in evaluating the gas turbine generators are: new and clean conditions (typical of new equipment); maximum mass flow conditions under site-specific ambient and operating conditions; maximum fuel input conditions.

The next step is to determine the Minimum Auxiliary Load, sometimes called parasitic load. These are the loads that require electric power (energy) for auxiliary and accessory equipment necessary to operate the electric generation facility. The auxiliary loads of interest here are those that correspond to the Gross Rating conditions. They are determined at design ambient conditions as defined for the facility under Gross Rating determination.

The final step is to calculate the Net Generating Capacity. The Net Generating Capacity is determined by subtracting the Gross Rating from the Minimum Auxiliary Load.

This methodology has been used and accepted by the Energy Commission for evaluating thermal power plant generating capacity for over 15 years. As stated in the Draft Initial Study, the Riverside Energy Resource Center (RERC) proposes to use two

GE LM6000 NxGen Sprint gas turbines nominally rated at 50,080 kW at ISO conditions (GTW 2004). Therefore, with the Gross Rating of the two LM6000 turbines at 101,600 kW and the Minimum Auxiliary Load at 2,000 – 3,000 kW per turbine (total Minimum Auxiliary Load of 4,000 – 6,000 kW), the Net Generating Capacity (96,000 kW) of the RERC is below the 100 MW threshold as needed to qualify for an SPPE. The Energy Commission has previously exempted such projects as the Kings River Conservation District Peaking Plant and the Modesto Irrigation District Electric Generation Station Ripon from the site certification process. These two projects used the same GE LM6000 turbines as the RERC and had the same finding with the Gross Rating near 100 MW and the Net Generating Capacity below the 100 MW threshold due to the loss of capacity from Auxiliary Loads.

## **CONCLUSIONS**

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The RERC, if constructed and operated as proposed, would generate a nominal 96 MW of electric power with the maximum overall project fuel efficiency of 38.3 percent LHV. While it will consume substantial amounts of energy, the RERC will do so in an efficient manner. It will not create significant adverse effects on energy supplies or resources, will not require additional sources of energy supply, and will not consume energy in a wasteful or inefficient manner. No energy standards apply to the project. Staff therefore concludes that the RERC would present no significant adverse impacts upon energy resources.

## **PROPOSED CONDITIONS OF EXEMPTION**

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No conditions of exemption are proposed.

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# **GEOLOGY, MINERAL RESOURCES, AND PALEONTOLOGY**

Testimony of Dal Hunter, Ph.D., C.E.G.

## **INTRODUCTION**

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In the geology, mineral resources, and paleontology section, staff discusses potential impacts of the proposed Riverside Energy Resource Center (RERC) project regarding geologic hazards, geologic (including mineralogic), and paleontologic resources. Energy Commission staff's objective is to ensure that there will 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**

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The applicable LORS are listed in the SPPE Application in Sections 6.5.2 and 6.6.2 (RERC, 2004a). Staff has identified the following LORS for geologic hazards and resources, and paleontologic resources, as useful as significance criteria for evaluating whether the project as proposed will have a substantial adverse impact on the environment.

### **FEDERAL**

The proposed RERC is not located on federal land and does not involve any federal actions; as such, the National Environmental Policy Act (NEPA) does 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 2001 edition of the California Building Standards Code (CBSC). The CBSC includes a series of standards that are used in project investigation, design, and construction (including grading and erosion control).

To the extent not exempted by Section 530091, the RERC project shall comply with all applicable sections of the City of Riverside General Plan.

### **CEQA**

The California Environmental Quality Act 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" (Society of Vertebrate Paleontology [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.

## SETTING

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The RERC Project is a proposed 96 megawatt (MW) natural-gas-fired, simple-cycle generating facility to be constructed on a 12-acre, fenced parcel in the city of Riverside, California. The facility will be located adjacent to the City of Riverside waste water treatment plant (WWTP) and will occupy 8 of the 12 acres. The remaining 4 acres will be used as a storage yard during and after construction. The proposed RERC will be a peaking facility to supplement electric supply for the internal needs of the City of Riverside. No power will be exported outside the city.

RERC will consist of:

- A 96 MW nominal, natural gas-fired, aero-derivative simple-cycle generating facility consisting of two combustion turbine generators;
- Upgrading approximately 1.75 miles of 69 kV transmission line
- Natural gas, water supply, and waste disposal will be supplied by short extensions of existing lines from the WWTP.

The Small Power Plant Exemption (SPPE) application (RERC, 2004a) provides limited documentation of potential geologic hazards at the plant site. Review of the SPPE and preliminary plant site geotechnical report (RERC, 2004a), coupled with staff's independent research, indicates that potential geologic hazards at the site are minimal. Staff's independent research included review of available geologic maps, reports, and related data of the RERC plant site and associated linear facility areas. Geological information was available from the California Geological Survey (CGS), U. S. Geological Survey (USGS), and other governmental organizations.

Detailed discussion and information about the geology along the proposed transmission line upgrade was not included in the SPPE application (RERC, 2004a). However, given the similar mapped geology at the plant site and along the transmission line, minimal geologic hazards are anticipated. In order to accurately assess the potential for liquefaction, dynamic compaction, hydrocompaction, subsidence, and expansive soils at the plant site and along the linear facilities, subsurface exploration and associated laboratory testing and analyses will be performed during the design-level geotechnical investigation per Condition of Exemption **GEO-1**.

## **SITE GEOLOGY**

The proposed RERC is located in the northern end of the Peninsular Range geomorphic province of Southern California. This province is characterized by a number of northwest trending mountain ranges separated by valleys and plains and is bounded to the north by the east-west mountains of the Transverse Range geomorphic province. The RERC site lies within the Perris Plain, bounded by the San Jacinto Mountains to the East and the Santa Ana Mountains to the southwest. To the north lie the San Bernardino and San Gabriel mountains of the Transverse Range.

The Perris Plain is a pediment, consisting of scattered, island-like hills of plutonic rock surrounded by thin alluvium generated from erosion of the surrounding mountain ranges and valley fills of variable depth. The plutonic rocks are Cretaceous in age and dominated by quartz monzonite (tonalite), granodiorite and quartz diorite, all granitic rocks. Lesser volumes of volcanic and metamorphic rock are also present. The Pedley Hills, 1.2 miles north of RERC is an inland-like mass of quartz diorite that has resisted erosion (Morton and Cox, 2001).

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. Igneous bedrock was encountered in all explorations at depths of 6 feet or less. The surficial materials consist of fill (6 of 29 borings) or weathered bedrock (LOR, 2004a, 2004b).

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, 2004a).

## **FAULTING AND SEISMICITY**

Energy Commission staff reviewed the California Geological Survey (CGS) publication "Fault Activity Map of California and Adjacent Areas (Jennings, 1994), Geologic Map of California – Santa Ana Sheet (Rogers, 1965), Fault Rupture Hazard Zones in California (Hart and Bryant, 1999), the Simplified Fault Activity Map of California (Jennings and Saucedo, 2002), and Maps of Known Active Fault Near-Source Zones in California and Adjacent Parts of Nevada (International Conference of Building Officials [ICBO], 1998). The project is located within Seismic Zone 4 as delineated on Figure 16-2 of the CBSC.

No active or potentially active faults are known to cross the power plant footprint or the transmission line. The closest known active (Holocene age) fault is the San Bernardino Valley Segment of the San Jacinto Fault, approximately 10.9 miles northeast of the RERC plant site. Other faults with potential to induce ground shaking at the RERC site include the Elsinore-Whittier segment (12.7 miles southwest), the Cucamonga (14.9± miles to the north) and the San Andreas (San Bernardino segment) located about 18.7 miles to the northeast. Staff has calculated the approximate deterministic peak ground acceleration at the site for each of the four closest active faults (Boore et al., 1997).

Fault Name	Moment Magnitude	Distance from Site	Calculated Peak Ground Acceleration
San Jacinto (San Bernardino Segment)	6.7	10.9 miles	0.15g
Elsinore-Whittier Segment	6.8	12.7 miles	0.14g
Cucamonga	7.0	14.9 miles	0.17g
San Andreas (San Bernardino Segment)	7.4	18.7 miles	0.14g

The CSBC requires a much higher design ground acceleration for this site.

### **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. Since the plant site is underlain by igneous bedrock, liquefaction is not possible.

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 potential for dynamic compaction is negligible at this site since no more than 4 feet of fill overlies bedrock.

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 site is underlain by a veneer of fill and bedrock, hydrocompaction (collapse) 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. Typically, these forms of subsidence affect a large area. Since the RERC will 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 site.

Soil expansion occurs when clay-rich soils, with an affinity for water, exist in-place at a moisture content 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 plant site is entirely underlain by igneous bedrock covered by a veneer of silty sand (non-expansive) fill. As a result, the potential for expansive soils is negligible.

## **LANDSLIDES**

Landslide potential at the RERC plant site is considered to be negligible. The project is to be located on a pediment that is fairly flat and underlain by volcanic bedrock.

## **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 plant site is situated approximately 720 feet above mean sea level. The closest body of water will 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.

## **GEOLOGICAL AND PALEONTOLOGICAL RESOURCES**

Energy Commission staff have reviewed applicable geologic maps and reports for this area (Saul et al., 1968; DOGGR, 1982; Tooker and Beeby, 1990; Larose et al., 1999; and Morton and Cox, 2001). 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 plant site.

The applicant's consultant conducted a paleontologic resources field survey and a sensitivity analysis for the proposed RERC and the proposed transmission line upgrade to support the RERC. No significant fossil localities were identified at the RERC site or directly along the transmission line. The RERC 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. Locally, Pleistocene age alluvial

fan deposits may be encountered along the transmission line alignment. Though no fossils are known to exist on the site or along the transmission line, significant fossils have been found in similar materials within Riverside County. Because this is an update to an existing line, construction and long-term impacts should be minimal. The Pleistocene alluvial deposits have been assigned a “high” sensitivity rating with respect to potentially containing paleontological resources. Paleontologic sites serve as indicators in the sedimentary unit or formation in which they are found. Based on the recommendations in the guidelines provided by the Society of Vertebrate Paleontology (SVP), if an area is determined to have a high potential for containing paleontologic resources, a program for mitigation is developed. Based on a review of available information and since locally the geologic units may exhibit a “high” sensitivity with respect to potential paleontologic resources, staff concludes that the proposed RERC project has high potential to expose significant paleontologic resources locally during ground disturbance activities and, therefore, requires a mitigation plan.

## **IMPACTS**

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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.

<b>ENVIRONMENTAL CHECKLIST</b>	<b>Potentially Significant Impact</b>	<b>Less than Significant with Mitigation Incorporated</b>	<b>Less than Significant Impact</b>	<b>No Impact</b>
<b>GEOLOGY - Would the project:</b>				
A. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving		X		
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
C. 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, or collapse the loss of topsoil?				X
D. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X
E. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				NA
<b>MINERAL RESOURCES - Would the project:</b>				
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
<b>PALEONTOLOGICAL RESOURCES - Would the project:</b>				
A. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		

## **DISCUSSION OF IMPACTS**

### **Geology and Soils**

#### **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 RERC plant site and related linear facilities are 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 project will be designed and constructed to conform to the CBSC (2001) requirements for Seismic Zone 4 and a horizontal peak ground acceleration value of at least 0.4g. Conditions of Exemption **GEO-1** will mitigate this potential seismic impact by requiring the Applicant to follow the specific recommendations of the CBSC and prepare the soils engineering report.

##### **III. Seismic Ground Failure or Liquefaction: No Impact**

This is a bedrock site with no potential for seismic ground failure or liquefaction.

##### **IV. Landslides: No Impact**

Since the project facilities are located on a relatively flat alluvial plain, landslide potential is not considered to be a potential impact.

#### **C. Unstable Soils: No Impact**

This is a bedrock site covered by a veneer of non-expansive fill in some areas.

#### **D. Expansive Soils: No Impact**

No expansive soils are present on this bedrock site.

#### **E. Wastewater: See Hydrology and Water Quality Section**

The RERC project is located adjacent to the City of Riverside waste water treatment plant. Domestic wastewater will be discharged to the Riverside sewer system. Additional information about wastewater can be found in the **Hydrology and Water Quality** section of this report.

### **Mineral Resources**

#### **A. Loss of Mineral Resources: No Impact**

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

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

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

## **Paleontology**

### **A. Destruction of Paleontological Resource or Geologic Feature: Less Than Significant With Mitigation Incorporated**

Based upon the literature search and field surveys performed by the Applicant for the project, the Applicant has proposed monitoring and mitigation measures to be followed during the construction of the plant and associated linear facilities. Energy Commission staff agrees with the Applicant that the scientific value of any vertebrate fossils encountered during construction of the plant and related features would be recovered with the implementation of a mitigation plan per the guidelines of the Society of Vertebrate Paleontology (SVP). As stated in the RERC application, potential impacts to potentially significant paleontological resources are expected to be primarily construction-related, rather than related to plant operation. The applicant has committed to retaining a qualified paleontologist to design and implement a paleontological resources monitoring and mitigation program (PRMMP) during construction activities. With the implementation of a scientifically valid and accepted monitoring and mitigation program that includes curation of recovered paleontological resources, impacts to paleontologic resources will be less than significant. All of the plant site, and probably the majority of the transmission line alignment, are underlain by igneous bedrock at shallow depth.

## **CUMULATIVE IMPACTS**

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The RERC site lies in an area that exhibits minimal geologic hazards and no known geologic or mineralogic resources at the plant site or linear facilities. Based on this information and the proposed conditions of exemption to mitigate potential project specific impacts, it is staff's opinion that the potential for adverse cumulative impacts to the project from geologic hazards, and to potential geologic, mineralogic, and paleontologic resources from the proposed project is less than significant.

## **RESPONSE TO PUBLIC AND AGENCY COMMENTS**

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None received.

## **CONCLUSION AND RECOMMENDATIONS**

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With implementation of the mitigation measures identified by the applicant and the Condition of Exemption, the project should have no adverse impact with respect to geological and paleontological resources.

## PROPOSED CONDITIONS OF EXEMPTION

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**GEO-1** The Soils Engineering Report required by the 2001 CBSC Appendix Chapter 33, Section 3309.5 Soils Engineering Report, shall specifically include data verifying that the potential for liquefaction, dynamic compaction, expansion, and collapse potential of site soils is negligible along the transmission line alignment.

**Verification:** At least 30 days prior to the start of ground disturbance, the project owner shall submit a copy of the Soils Engineering Report.

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# HAZARDOUS MATERIALS MANAGEMENT

Testimony of Geoff Lesh, P.E. and Rick Tyler

## INTRODUCTION

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This section provides a discussion of staff's evaluation of the potential impacts of the proposed Riverside Energy Resource Center (RERC) 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 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 monitoring and mitigation measures with respect to hazards and hazardous materials, with the inclusion of three Conditions of Exemption.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

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A framework, based on environmental laws, ordinances, regulations and standards (LORS), exists to reduce risks of accidents and reduce routine hazards. The following federal, state, and local laws generally apply to the protection of public health and the environment. Their provisions have established the basis for staff's determination regarding the significance of potential impacts and acceptability of the RERC project.

### FEDERAL

#### **Superfund Amendments and Reauthorization Act of 1986**

The Superfund Amendments and Reauthorization Act of 1986 (Pub. L. 99 - 499, §301,100 Stat. 1614 [1986]), also known as SARA Title III, and Clean Air Act (CAA) of 1990 (42 U.S.C. §7401 *et seq.* as amended), established a nationwide emergency planning and response program, and imposed reporting requirements for businesses which store, handle, or produce significant quantities of extremely hazardous materials. Section 112(F) of the CAA, 42 U.S.C. §7412(F) 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 through preparation of Risk Management Plans. These requirements of the CAA are reflected in the California Health and Safety Code, section 25531 *et seq.*

### STATE

#### **California Health and Safety Code, Section 25534 and 25535.1**

The California Health and Safety Code, sections 25534 and 25535.1, direct owners of a stationary source, as defined in 40 C.F.R. §68.3, who store or handle acutely hazardous materials in reportable quantities, to develop a Risk Management Plan (RMP) and to submit it to appropriate local authorities, the United States Environmental Protection Agency (USEPA), and the designated local administering agency for review and

approval. The plan must include an evaluation of the potential impacts associated with an accidental release, the likelihood of an accidental release occurring, the magnitude of potential human exposure, any pre-existing evaluations or studies of the material, the likelihood of the substance being handled in the manner indicated, and the accident history of the material. Riverside County Health Agency, Department of Environmental Health is the local administering agency to determine the requirement for an RMP.

### **California Health and Safety Code, Section 41700**

California Health and Safety Code, section 41700, requires that “No person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes 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 Government Code, Section 65850.2**

California Government Code, section 65850.2, restricts the issuance of an occupancy permit to any new facility involving the handling of acutely hazardous materials until the facility has submitted an RMP to the administering agency with jurisdiction over the facility. Riverside County Health Agency, Department of Environmental Health is the local administering agency.

## **LOCAL**

### **Uniform Fire Code**

The Uniform Fire Code (UFC) contains provisions regarding the storage and handling of hazardous materials. These provisions are contained in Articles 79 and 80. These articles contain minimum setback requirements for the outdoor storage of ammonia.

### **California Building Code**

The California Building Code also contains requirements regarding the storage and handling of hazardous materials. The Chief Building Official must inspect and verify compliance with these requirements prior to issuance of an occupancy permit.

## **SETTING**

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The proposed RERC project site occupies 12 acres near the northeast corner of the intersection of Jurupa Avenue with Acorn Street in the City of Riverside, Riverside County. It is situated on the east side of and adjacent to the City of Riverside’s Wastewater Treatment Plant (WWTP) in a light industrial/manufacturing area. The power plant and associated administration building and warehouse will occupy approximately 8 of the 12 acres. The additional 4 acres are reserved for equipment storage and construction parking.

The primary fuel source for the RERC Project is natural gas. Selective Catalytic Reduction (SCR) is to be used to reduce nitrogen oxide (NO<sub>x</sub>) emissions from the combustion of natural gas in the combustion turbine. Aqueous ammonia will be used in

the SCR process to convert the NO<sub>x</sub> into nitrogen and water vapor, requiring the installation of one above-ground storage tank for aqueous ammonia. A number of other hazardous chemicals will also be used at the new RERC facility in small quantities.

Proposed safeguards and measures to greatly reduce the opportunity for, or the extent of, exposure to hazardous materials or other hazards would be put in place.

## 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.

<b>ENVIRONMENTAL CHECKLIST</b>	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?		<b>X</b>		
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?		<b>X</b>		
C. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				<b>X</b>
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?				<b>X</b>
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?			<b>X</b>	
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?				<b>X</b>
G. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				<b>X</b>

<b>ENVIRONMENTAL CHECKLIST</b>	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
HAZARDS AND HAZARDOUS MATERIALS – Would the project:				
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?				<b>X</b>
I. Exceed an applicable LRDP or Program EIR standard of significance?				<b>X</b>
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?				<b>X</b>

## 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 with Mitigation Incorporated

A variety of 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 facility is included in Table 6.14-2 of the SPPE application (RERC 2004a). One of these materials, aqueous ammonia, and natural gas are addressed below.

The hazard characteristics of ammonia and natural gas and their proposed use in substantial amounts during the operation of the plant pose the principal risk of off-site impacts. The potential threats from the other hazardous materials are less than 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

Selective Catalytic Reduction (SCR) is proposed to reduce nitrogen oxide (NO<sub>x</sub>) emissions to meet the plant's air quality permit requirements. Aqueous ammonia reacts with a catalyst to convert the NO<sub>x</sub> into inert water vapor and nitrogen in the SCR process. The aqueous ammonia proposed for use is a solution of approximately 19 percent ammonia and 81 percent water. Solutions containing more than 20 percent ammonia are considered regulated materials exceeding reportable quantities defined in the California Health & Safety Code section 25532(j). The proposed use of aqueous ammonia significantly reduces the risks that would otherwise be associated with use of the more hazardous anhydrous form of ammonia. The aqueous form eliminates the high internal energy associated with the more lethal anhydrous form, which is stored as a liquefied gas at elevated pressure. The high internal energy associated with the anhydrous form of ammonia can act as

a driving force in an accidental release that can rapidly introduce large quantities of the material to the ambient air, where it can be transported in the atmosphere and result in high down-wind concentrations. Spills associated with the aqueous form are also much easier to contain than those associated with the anhydrous form. In addition, relatively slow mass transfer from the free surface of the spilled aqueous solution limits emissions from a spill of aqueous ammonia.

Aqueous ammonia is typically transported and handled safely and without incident. However, mishandling can result in impacts on public health, particularly during transfer from a delivery vehicle to a storage tank. It is during this transfer operation that the greatest risk of an accidental spill and release could occur. Thus, measures to prevent accidental releases and mixing with incompatible materials during transfer are extremely important and will be required as part of a Safety Management Plan for delivery of aqueous ammonia (see Condition of Certification **HAZ-3**).

A significant number of modern power plants routinely use aqueous ammonia and the Energy Commission has licensed many such plants. Much of the risks associated with using ammonia are already reduced through RERC's proposed use of the aqueous form of ammonia. Project compliance with LORS and staff's Conditions of Exemption make it unlikely that the use of aqueous ammonia will result in a significant threat to public health and the environment.

The transportation of hazardous materials including aqueous ammonia, particularly on California freeways, is routinely regulated and controlled by various federal and state laws, ordinances, regulations, and standards as discussed in the section titled Traffic and Transportation. There are a number of transportation accident studies that support the fact that such incidents and corresponding chances are highly dependent on the type of roadway and surroundings. It has been reported that the truck accident frequency for all types of trucks, not exclusively for trucks transporting hazardous materials, is highest for an undivided multilane road at 5.44 accidents per million miles compared to 0.93 accidents per million miles for a freeway in rural California (Davies et. al., 1992).

A recent study went even further by concluding that releases of hazardous materials on freeways rarely play a role in deaths or injuries (FMCSA, 2000). It is therefore reasonable to say that the likelihood of an accident involving a release of ammonia is probably higher on local roads than on freeways. This is supported in a report that observed that accident rates in general are typically much higher for two-lane rural roads compared to multilane highways (USDOT, 1998).

Staff has evaluated available routes for shipment of hazardous materials to the facility and concludes that the risk to the public from transportation of aqueous ammonia is less than significant with mitigation incorporated. Most of the transportation route would be along interstate freeway. The anticipated travel routes for hazardous materials deliveries will be along State Route 60, Van Buren Boulevard and Jurupa Avenue. Van Buren Boulevard is a four-lane roadway and provides two travel lanes per direction divided by a raised median. The intersection of Van Buren Boulevard with Jurupa Avenue is controlled by a traffic signal. Jurupa Avenue is a four-lane roadway providing two travel lanes per direction and is divided

by a two-way left turn lane. Because the facility is located within five miles of Interstate I-15, and seven miles from Interstate I-215 and the off-freeway roads are multiple laned, it is very unlikely that a serious release would occur in the project area.

Staff concludes that with the limited off-freeway distance and improved roads in the vicinity of the project, any potential adverse impacts to area residents, including minority and low-income, from the transport of aqueous ammonia would be limited to a level less than significant through the Applicant's conformance to applicable standards and laws, in conjunction with staff's proposed Conditions of Exemption.

### **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 less than significant levels through adherence to applicable codes and the development and implementation of effective safety management practices. The National Fire Protection Association (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 will significantly reduce the likelihood of an explosion in gas-fired equipment. Additionally, start-up procedures will require air purging of the gas turbines prior to start-up, thus precluding the presence of an explosive mixture.

The facility will also require the installation of 140 feet of new natural gas pipeline to connect to the existing Sempra gas transmission line that passes next to the northeast corner of the site boundary. This new line will provide the service line to connect from the Sempra gas line to the on-site gas meter station. This line could result in accidental release of natural gas. In order to detect an accidental release of natural gas, both Sempra's main pipeline and the gas in the proposed pipeline will be odorized. The existing U.S. Department of Transportation (DOT) requirements will require the owner to prepare an operations and maintenance plan that addresses both normal procedures and conditions, and any upset or abnormal conditions that could occur. The pipeline segments will be under a continuous cathodic protection system and the owner will perform periodic cathodic protection surveys. There will be markers to identify the pipeline locations, as well as a posting of the toll-free number to call prior to any excavation that may occur around the pipeline

The proposed new pipeline segment will be designed, constructed, owned and operated in accordance with national safety codes and the safety standards for new gas pipelines stated in the California Public Utility Commission's General Order (G.O.) 112-E.

It is staff's belief that design and operation of these pipelines in accordance with applicable standards will result in an less than significant risk of impact to the public as a result of accidental release of natural gas from the new pipelines.

## **B. Accidental Release of Hazardous Materials: Less than Significant with Mitigation Incorporated**

Aqueous ammonia is being proposed for use in controlling NO<sub>x</sub> emissions created during the combustion of natural gas at the facility. As stated in section A above, the preparation of an aqueous ammonia Safety Management Plan will address potential impacts that might occur during the transfer of aqueous ammonia from the delivery vehicle to the storage tank.

Staff reviewed the applicant's proposal to use aqueous ammonia. The applicant modeled a potential worst-case release of the full contents of the ammonia tank using the RMP\*Comp program. The results indicated that there is a potential for the ERPG-2 concentration level (200 ppm) to be reached at a distance of 0.2 miles downwind from the release point. This distance would be beyond the site's fence line, as would the downwind distance to the Energy Commission's de minimus concentration level of 75 ppm. Staff's own modeling confirmed these results. There are no sensitive receptors or areas with high concentrations of minority or low-income people within the 0.2 mile radius potential reached by an ERPG-2 concentration. The nearest residentially zoned area is at a distance of one half mile to the south of the facility, and is beyond the reach of any ERPG-2 concentrations.

Staff considers this analysis to be conservative in that it is likely to be over-predicting of the downwind distance that a potential spill plume might travel for the following reasons:

- Applicant plans to use floating balls in the bermed area surrounding the ammonia storage tank to drastically reduce the exposed surface area of any potential spill. The initial and subsequent rates of ammonia evaporation into the atmosphere would be similarly reduced. This mitigation effect was not included in the release modeling.
- The solution of ammonia in water will rapidly deplete and cool, reducing the duration of significant release of ammonia to approximately ten to fifteen minutes, although release durations used in modeling were 60 minutes. Any downwind concentrations would exist for shorter durations and at shorter distances than the models predict.
- The RMP\*Comp modeling program is perhaps the most conservative of the commonly used plume modeling programs, in that it does not allow for positive buoyancy effects of lighter-than-air gases. The plumes of such gases tend to rise from the ground, reducing the effective ground level concentrations that would otherwise be predicted.

Staff expects that the 75 ppm concentration limit would fall short of reaching any sensitive receptors or areas with high concentrations of minority or low-income people. Compliance with applicable LORS, existing safeguards, and staff's Conditions of Exemption will greatly reduce the opportunity for, or extent of, exposure of the public to ammonia vapors.

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

There are no known schools within a ¼ mile radius of proposed project. 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 2 miles southwest of the Project site, and Norte Vista High approximately 1.4 miles west of the Project site. At these distance, there is virtually no risk of a hazardous plume causing an off-site impact. The nearest private school is United Submission Academy on Jurupa Ave, approximately 0.3 miles from the facility.

**D. Site Listed as Hazardous: No Impact**

The RERC project is not located on a hazardous waste site.

**E. Airport Hazard Area: Less Than Significant Impact**

The Riverside Municipal Airport is located approximately 0.7 miles south of the project site. At this distance, there would be a less than significant risk of impact from hazardous materials usage at RERC. The RERC project would therefore, not result in a safety hazard for people residing or working in the project.

**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 site would be mostly paved and hence clear of substantial vegetation. The immediate area around the site would be landscaped with limited brush, shrubs, or trees and maintained and irrigated so as not to colonize the site.

Fire hazard from vegetation is not a concern since any landscaped trees, brush, or grass surrounding the RERC site would be maintained and irrigated on a regular basis.

**I. Exceed an applicable LRDP or Program EIR standard of significance: No Impact**

The proposed site development and use is consistent with the County of Riverside General Plan and the City of Riverside General Plan.

**J. Impact on Fire Protection Services: No Impact**

The proposed 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 a less than

significant risk of fire or explosion. The fire protection system will comply with the requirements of the City's underwriters, and the local Fire Marshal. Equipment will be listed and approved by the California Fire Marshal. Fire water reserve supply will meet the requirements of the National Fire Protection Association and the California Fire Code. Similarly, the need for hazmat response services also would be infrequent given the levels of proposed safeguards. The current response times are 5 minutes from Station 5-Engine Co., (2.4 Miles) and 6 minutes from Station 2-HazMat (3 miles) according to Capt. Luna RFD, Station 5. Compliance with applicable LORS, existing safeguards, and staff's Conditions of Exemption will ensure that local fire protection services are not impacted.

## **CUMULATIVE IMPACTS**

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The primary potential cumulative effect would require consideration of the possibility 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 nearby Riverside Waste Water Treatment Plant would be the most significant nearby user of industrial chemicals. The WWTP is in the midst of a six-year expansion and upgrade. Staff considers the scenario of simultaneously occurring releases, under meteorological conditions which would allow plumes from the two sites to merge, and travel downwind without significant dispersion, to be extremely unlikely.

Although the presence of the RERC facility will increase the amounts of hazardous materials in the local project area, the quantities present and mitigating measures proposed will result in no expected significant cumulative impacts.

## **RESPONSE TO COMMENTS**

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CURE's Pre-hearing Conference statement (P.7, F.) misstates the maximum point of impact of an on-site ammonia spill as being within a six-mile radius. The actual maximum point of impact is within 0.2 miles, as shown above in Section B of the Impacts discussion.

## **CONCLUSIONS**

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By incorporating the appropriate Conditions of Exemption, the routine transport to and use of hazardous materials at the RERC project site will not result in significant impacts to the public or the environment. Analysis shows that there will be no significant direct or cumulative impact to any population including areas with high concentrations of minority or low-income people.

## **PROPOSED CONDITIONS OF EXEMPTION**

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**HAZ-1** The project owner shall direct all vendors delivering aqueous ammonia to the site to use only tanker truck transport vehicles, that meet or exceed the specifications of DOT Code MC-307.

**Verification:** At least 30 days prior to receipt of aqueous ammonia onsite, the project owner shall submit to the CPM for review and approval, copies of the notification letter sent to supply vendors indicating the required transport vehicle specifications.

**HAZ-2** The project owner shall not use any hazardous material in reportable quantities, as specified in Title 40, Code of Federal Regulations, section 355.50, not listed in Table 6.14-2 of the SPPE application (RERC2004a), unless approved in advance by the CPM.

**Verification:** The project owner shall provide to the CPM, in the Annual Compliance Report, a list of hazardous materials contained at the facility in reportable quantities.

**HAZ-3** The project owner shall develop and implement a Safety Management Plan for delivery of aqueous ammonia and submit the plan to the CPM for review and approval. The plan shall include procedures, protective equipment requirements, training and a checklist. It shall also include a section describing all measures to be implemented to prevent mixing of aqueous ammonia with incompatible hazardous materials.

**Verification:** At least thirty days prior to the delivery of aqueous ammonia to be used at the facility, the project owner shall provide a safety management plan as described above to the CPM for review and approval.

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# HYDROLOGY AND WATER QUALITY

Testimony of Tony Mediati

## INTRODUCTION

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This analysis examines water resources issues related to the proposed Riverside Energy Resource Center (RERC) project. The purpose of staff's analysis is to determine whether potential impacts to water resources from the proposed project will be significant. An evaluation of relevant laws, ordinances, regulations, and standards (LORS) has been included to assist in staff's analysis. All potential impacts are evaluated and summarized in respect to significance thresholds established in the CEQA Environmental Checklist. This analysis for the proposed RERC project specifically addresses the following topics:

- Whether the project's wastewater management practices will lead to degradation of surface or ground water quality;
- Whether construction or operation will lead to significant wind or water erosion and sedimentation; and
- Whether project construction or operation will lead to degradation of surface or groundwater quality.

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

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Staff has identified the following LORS as useful significance criteria to evaluate whether the proposed project will have a substantial adverse impact on water resources.

### FEDERAL

#### Clean Water Act

The Clean Water Act (33 USC § 1257 et seq.) requires states to set standards to protect water quality through the regulation of point source and certain non-point source discharges to surface water. These discharges are regulated through requirements set forth in specific or general National Pollutant Discharge Elimination System (NPDES) permits. Stormwater discharges during construction and operation of a facility, and incidental non-stormwater discharges associated with pipeline construction also fall under this act, and are addressed through a general NPDES permit. In California, requirements of the Clean Water Act regarding regulation of point source discharges and stormwater discharges are delegated to, and administered by, the nine Regional Water Quality Control Boards (RWQCB).

### STATE

#### 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. The waste, unreasonable use or unreasonable method of use of

water is prohibited. The conservation of such waters is to be exercised with a view to the reasonable and beneficial use in the interest of the people and for the public welfare. The right to water or to the use or flow of water in or from any natural stream or water course in the State is and shall be limited to such water as shall be reasonably required for the beneficial use to be served, and such right does not and shall not extend to the waste or unreasonable use, or unreasonable method of use, or unreasonable method of diversion of water.

### **Porter-Cologne Water Quality Control Act**

The Porter-Cologne Water Quality Control Act of 1967, Water Code Section 13000 et seq., requires the State Water Resources Control Board and the nine regional RWQCBs to adopt water quality criteria to protect the State's waters. These criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. The criteria for the RERC project area are contained in the Region Water Quality Control Plan. This plan sets numerical and/or narrative water quality standards controlling the discharge of wastes to the State's waters. These standards are applied through the issuance of Waste Discharge Requirements (WDRs) by the RWQCB.

### **California Water Code**

Section 13146 of the Water Code specifies 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 board in writing their authority for not complying with such policy.

### **Recycling Act of 1991**

The Water Recycling Act of 1991 (Water Code § 13575 et seq.) encourages the use of recycled water whenever possible.

### **Water Recycling Criteria**

Under Title 22 of the California Code of Regulations § 60301 et seq., the California Department of Health Services (DHS) reviews and approves wastewater treatment systems to ensure they meet tertiary treatment standards allowing use of reclaimed water for industrial processes such as steam production and cooling water.

## **POLICIES**

### **SWRCB Resolution 75-58**

The SWRCB has also adopted a number of policies that provide guidelines for water quality protection. The principal policy of the State Board, which 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, 1975 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. This SWRCB policy requires that power plant cooling water should come from (in order of priority): wastewater being

discharged to the ocean, ocean water, brackish water from natural sources or irrigation return flow, inland waste waters of low total dissolved solids, and other inland waters. This policy goes on to address cooling water discharge prohibitions. Resolution 75-58 is not administered through a permitting process by the State Water Resources Control Board.

### **SWRCB Resolution 77-1**

State Water Resources Control Board Resolution 77-1 encourages and promotes reclaimed water use for non-potable purposes.

## **LOCAL**

### **City of Riverside**

#### **General Plan Policies**

Goal WQ1: To preserve the quantity and quality of all water resources throughout the General Plan Area.

Policy 1.1: The City should adopt design and construction standards for new development that protect water quality, minimize erosion and sedimentation, and preserve natural drainage, habitat, and aesthetic functions. Standards should address runoff flow rates and the type, quality and quantity of particulates carried by runoff.

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.

Policy 1.5: The City should coordinate its plans, regulations and programs with those of other public and private entities, which affect the consumption and quality of water resources within the General Plan Area. These entities include water providers, Riverside County, and appropriate cities.

Goal SD 1: To achieve an effective system of natural and manmade drainage for Riverside.

Policy 1.3: The City shall require all development proposals to include stormwater drainage system plans that are compatible with master drainage plans adopted by the City.

## **SETTING**

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The RERC project would occupy 8 acres within a 12-acre parcel near the City of Riverside's Wastewater Treatment Plant (WWTP). The other four acres within the parcel would be used for construction parking and equipment storage. The project would be a peaking facility consisting of two aero-derivative combustion turbine generators. An on-site substation, approximately 1.75 miles of transmission line, a natural gas and water supply interconnection will also be included as in the project. After construction the area used for construction parking and equipment storage would be available for other uses.

## **GROUNDWATER**

The City of Riverside gets approximately 99 percent of its water supply from 49 groundwater wells located within the County boundary. The remaining one percent comes from the Western Municipal Water District (WMWD), a Riverside County agency. Between 1997 and 2001, the City pumped 84.8 percent of its groundwater supply from wells located in the San Bernardino Basin and 13.5 percent from wells in the Riverside Basin. 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 2001 was 75,145 acre-feet. Groundwater is pumped from these wells and distributed for municipal use (industrial and residential) through a system of underground pipelines.

Perched groundwater was encountered in 15 of 22 borings distributed across the site at depths ranging from 11 to 26 feet beneath the existing ground surface. The City of Riverside Public Utilities Water Department that would supply water to the site, indicated they have no wells in the area of the site. The Western Municipal Water District indicated there are no wells in the area of the site 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 (RERC 2004c).

## **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 (RERC 2004a).

## **WATER SUPPLY AND USE**

The proposed RERC will use tertiary treated wastewater supplied by the WWTP located adjacent to the project site for all process water needs and landscape watering. The peak water demand for the RERC is estimated at 220 gallons per minute (gpm) based on a 100 percent load at ambient temperatures of 100°F. The design case was based on the use of 220 gpm for 16 hours of operation per day. In the design case the water consumption was determined to be 0.221 million gallons per day (RERC 2004a). The estimated annual volume of water required for the project if both CTGs each run for 1330 hours per year is 32 million gallons per year (98 acre-feet per year)(RERC 2004c).

The project proposes to install a 50-foot diameter, 500,000-gallon raw water storage tank. The water supplied to this tank will be recycled water from the WWTP. The tank will provide 18 hours of makeup water at the design case. Raw water transfer pumps will deliver recycled water to the cooling tower as makeup water and provide the water to the plant demineralized water treatment system (RERC 2004a).

SWRCB Resolution 75-58 requires that power plant cooling water should come from (in order of priority): wastewater 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. The RERC has proposed to use recycled water. The use of recycled water for power plant cooling is consistent with Resolution 75-58.

Potable water for sanitary use will come directly from the City's general water supply. A separate connection to the City's potable water system, with an approved backflow preventer, will be made to supply fire water to the plant. The proposed connection points for the potable and fire suppression water supply are at Acorn Avenue, approximately 60 feet from the southwest corner of the site (RERC 2004a). The estimated volume of potable water required for toilets and sinks is 12,000 gallons per year (RERC 2004c).

## WASTEWATER DISCHARGE

### Process Wastewater

The RERC facility will generate wastewater primarily from cooling tower blowdown and demineralized water treatment plant wastes. Relatively minor contributions would come from process equipment wash downs and water system tank overflows. Wastewater 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 will be lead to a below grade coalescing oil-water separator. After removal of floatable oils and settleable solids, the wastewater from the oil-water separator will be pumped to the waste water storage tank where it will combine with wastewater from cooling tower blow down and demineralized water treatment area drains.

A zero liquid discharge (ZLD) system is proposed to treat process wastewater and thus eliminate process wastewater discharge from the RERC. Water from the wastewater storage tank will be fed to the ZLD system. Waste produced by the ZLD system will be properly disposed. The ZLD system eliminates the need for the discharge of power plant cooling water to either land or other surface waters. The ZLD system also has the advantage of making the maximum use of water supplies. Selection of the ZLD system design will depend on a cost and reliability analysis provided during the final design process.

The applicant has proposed three options for the ZLD system, included in **Soil & Water Resources Table 1** below.

**Soil & Water Resources Table 1  
Proposed ZLD Options**

Option	Conceptual Description	Final Waste Product
1	Brine Concentrator/Spray Dryer	Dry Solid
2	Reverse Osmosis/Crystallizer	Highly Concentrated Liquid
3	Reverse Osmosis/Crystallizer/Filter Press	Dry Solid

The following is a brief description of each of the ZLD options that RERC is considering:

### **Option 1 – ZLD Brine Concentrator/Spray Dryer**

This ZLD option consists of a brine concentrator and an electric air-heated spray dryer. The wastewater from the wastewater storage tank would be sent to a brine concentrator spray dryer system for processing. The brine concentrator process will be used for concentrating and evaporating wastewater. Recovered distilled water from the brine concentrator will be sent to the raw water storage tank for reuse as process makeup water. The small amount of highly concentrated brine solution will be sent to an electrically heated spray dryer system where the remaining water will be evaporated leaving a dry solid suitable for landfill disposal.

### **Option 2 – ZLD High Efficiency Reverse Osmosis/Crystallizer**

This ZLD option utilizes a conventional water softener, and a high efficiency Reverse Osmosis (RO) system, followed by a final crystallizer. The process involves sending wastewater to a water softener system upstream of the RO system to remove hardness and alkalinity. This pretreatment process essentially increases the overall efficiency of the RO process, which results in smaller quantities of wastewater being sent to the crystallizer. The ZLD final waste product will be a highly concentrated liquid brine waste that is trucked off-site for disposal.

### **Option 3 – ZLD High Efficiency Reverse Osmosis/Crystallizer/Filter Press**

This option is identical to Option 2, except the crystallizer effluent is further processed in a commercial filter press to produce a low moisture salt cake. In the filter press the remaining water will be evaporated leaving a salt cake suitable for landfill disposal.

In the case of Options 1 and 3, the solid or cake will be disposed of at an appropriately licensed landfill, and if Option 2 is selected, the highly concentrated waste will be required to be stored on-site with adequate secondary containment until it is trucked off-site to an appropriately licensed facility. In all cases, however, the wastewater discharge concerns are eliminated as there will no longer be a potential for ground or surface water contamination from process wastewater discharge during standard operating conditions.

### **Other Waste Streams**

While process wastewater is the primary wastewater stream associated with the project, other discharges include domestic/sanitary waste, and stormwater.

Domestic sanitary wastewater (e.g., toilets, showers, sinks) would be discharged to the City's domestic wastewater system. The WWTP has sufficient capacity for receiving the domestic waste from the RERC. The proposed RERC will not result in any significant impacts to the existing sewer system.

Stormwater runoff will be controlled during construction and RERC operations by adhering to the requirements of the General Construction Permit and General Industrial Permit that will be obtained from the RWQCB. The Construction StormWater Pollution Prevention Plan (SWPPP) will identify specific measures and Best Management Practices (BMPs) that will be implemented to control stormwater runoff.

The applicant has stated that erosion and sediment controls for construction activities would be selected from California's Construction BMP Handbook and would be properly installed and maintained in accordance with the manufacturers' specifications and good engineering practices. Soil and sediment control measures where necessary would be in place at the onset of soil disturbing activities. Construction-phase (temporary) BMPs would be selected to control runoff from a ten-year storm event and post-construction (permanent) control strategy would be based on a 50-year storm event (RERC 2004a). Geosynthetic and/or matting materials may be used around the site to stabilize soil, roads, and drains during construction activity for erosion protection.

Water trucks will be utilized for dust control. Preventative measures such as limiting the areas of disturbance would be utilized in addition to wet suppression methods. Roads used for construction access to the site would be stabilized immediately after grading. Stabilization practices may include applying gravel surfacing to roadways, or applying magnesium chloride or other product to graded surfaces to provide a more durable and less dusty surface. Stabilized roads shall be frequently maintained and restabilized as necessary. The main construction entrance, at the southeast corner of the site, would be stabilized by installing an aggregate surface course to reduce mud and sediment transport off-site by construction vehicles.

During grading activities, several areas may be used to stockpile soil. The soil would be stockpiled in a generally uncompacted condition prior to placement, and is, therefore, subject to erosion. In addressing stockpiling, BMPs would include diversion of drainage from the stockpile areas, placement of additional sandbag desilting facilities, silt fencing on the down gradient toe of the stockpile slope, and dust control. In addition, large stockpiles would be sloped to encourage sheet flow and reduce infiltration of rainwater.

Additional BMPs to be implemented during construction would be identified in the final Storm Water Pollution Prevention Plan prepared for the project.

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 underground stormwater retention/infiltration basin at the low side of the site. Stormwater that could potentially come in contact with hydrocarbons would be conveyed by underground piping to an oil/water separator prior to treatment. Off-site runoff enters the site from the south near the southeast property corner. This runoff would be captured and taken underground at a catch basin located south of the entrance road. From the catch basin, the off-site runoff would be routed by underground gravity piping to the stormwater retention/infiltration basin located at the low end of the site. The stormwater retention/infiltration basin would be sized to contain the difference in runoff volume between pre and post development of the site for a 50-year storm event and would have an open bottom for infiltration. The approximate size of the basin is estimated to be 10,000 cubic feet (75,000 gallons) (RERC 2004c). The infiltration rate of the basin is estimated to be 200,000 gallons per day. At this rate the full volume of the basin would infiltrate in approximately 9 hours. Overflow from the retention/infiltration basin would be sent to the WWTP (RERC 2004e).

RERC equipment areas that possess a potential for stormwater contamination, such as the chemical storage areas or transformer areas, would be designed with secondary containment basins to prevent contaminants from entering the stormwater system. The ammonia tank and generator step-up transformer containment basins would be designed with sump pumps to prevent discharge of contaminated water to the stormwater system (RERC 2004c). RERC 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 system (RERC 2004c).

Construction dewatering is not anticipated. Groundwater was encountered at 11 feet beneath the existing ground surface. The applicant does not expect to excavate down to 11 feet beneath ground surface.

## **IMPACTS**

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The Environmental Checklist below identifies impacts in the Hydrology and Water Quality issue area that could potentially result from the RERC project. A discussion of each impact and an explanation of the impact conclusion follow the checklist.

<b>ENVIRONMENTAL CHECKLIST</b>	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>HYDROLOGY AND WATER QUALITY -- Would the project:</b>				
A. Violate any water quality standards or waste discharge requirements?				<b>X</b>
B. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			<b>X</b>	
C. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?		<b>X</b>		
D. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?				<b>X</b>
E. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				<b>X</b>
F. Otherwise substantially degrade water quality?			<b>X</b>	
G. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				<b>X</b>
H. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				<b>X</b>
I. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				<b>X</b>
J. Inundation by seiche, tsunami, or mudflow?				<b>X</b>
K. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				<b>X</b>
L. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				<b>X</b>

<b>ENVIRONMENTAL CHECKLIST</b>	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>HYDROLOGY AND WATER QUALITY -- Would the project:</b>				
M. Require or result in the construction of new storm water drainage facilities or expansion existing facilities, the construction of which could cause significant environmental effects?				<b>X</b>
N. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				<b>X</b>
O. Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				<b>X</b>
P. Substantially deplete or degrade local or regional surface water supplies, particularly fresh water, or fail to implement reasonable alternatives for water conservation?				<b>X</b>

## **DISCUSSION OF IMPACTS**

### **A. Violation of Water Quality Standards or Waste Discharge Requirements: No Impact**

The applicant would use a ZLD system. Whether the resultant waste from the project is a solid, or a low volume-high concentration liquid waste, the project would avoid discharges to land or water bodies. Whichever ZLD system the applicant chooses, the project would have no impact to water resources.

Regarding construction and operation-related impacts to groundwater and surface water quality, the project would implement BMPs to control pollution of ground and surface water. The project would comply with applicable stormwater requirements, such that no degradation of water quality as a result of stormwater runoff or erosion occurs. Staff addresses stormwater quality in more detail within the following checklist sections.

### **B. Depletion of Groundwater Supplies or Recharge or Surface water supplies or quality: Less Than Significant Impact**

The project proposes to use recycled water for process and landscaping water needs. The potable water that will serve the project will be derived mostly from groundwater (99 percent) supplied by the City of Riverside. The project's estimated potable water need is 12,000 gallon per year (.037 acre-feet per year). In 2001, the City of Riverside's water use was 75,145 acre-feet. The City has agreed to supply potable water to the project.

The ZLD system allows the project to utilize water at a greater efficiency, thereby reducing project water demand by approximately 25%. No significant adverse impacts to ground water supplies or recharge are expected.

**C. Substantial Alteration of Drainage Patterns or Causing Erosion: Less Than Significant With Mitigation Incorporated**

The construction and operation of the proposed RERC project and associated linear elements would not substantially impact the existing drainage pattern or involve significant impacts to any streams or other water bodies.

Construction of the proposed RERC project would occur on 12 acres of land. The proposed project would occupy 8 acres for the plant site, and four acres for construction parking and equipment storage.

During construction stormwater runoff and erosion would be controlled by specific BMPs that are appropriate to minimize wind and water erosion associated with construction activities and developed in accordance with the SWPPP. These erosion and sediment control BMPs would achieve compliance with the NPDES General Permit for Stormwater Discharge Associated with Construction Activity and all other applicable LORS.

The applicant has indicated that adequate sedimentation and erosion controls would be employed, and will prepare a SWPPP for the construction phase of the project. The applicant would provide these documents for all project phases to the appropriate authorities as required by law. Accordingly, the project's impact on drainage patterns and erosion would be less than significant.

**D. Alteration of Drainage Resulting in Flooding: No Impact**

As described above, the construction and operation of the RERC project would not impact the existing drainage pattern or involve significant impacts to any streams or other water bodies. The proposed project would not result in substantial increases in surface runoff or cause flooding. The project is located outside of the 100-year floodplain and is, therefore, not expected to result in any flood events.

Stormwater discharges from the project would be routed to the stormwater retention/infiltration basin. The basin would be designed for a 50-year storm event with 10,000 cubic feet (75,000 gallons) of capacity and an infiltration rate of 200,000 gallons per day. This system should provide adequate stormwater coverage for the facility, as the project would not significantly add to runoff in the project vicinity.

**E, M. Excess Runoff or Storm water Drainage: No Impact**

Stormwater discharges from the project would be routed to the stormwater retention/infiltration basin. The basin would be designed for a 50-year storm event with 10,000 cubic feet of capacity. The increase in runoff that would be created as a result of the addition of impervious area to the site, would be contained on-site in the stormwater basin. This system should provide adequate stormwater coverage for the facility, as the project would not significantly add to runoff in the project vicinity.

#### **F. Degradation of Water Quality: Less Than Significant Impact**

The proposed project's waste would be discharged in accordance with applicable laws and local permits.

RERC equipment areas that possess a potential for stormwater contamination, such as the chemical storage areas or transformer areas, would be designed with secondary containment basins to prevent contaminants from entering the stormwater system. The ammonia tank and generator step-up transformer containment basins would be designed with sump pumps to prevent discharge of contaminated water to the stormwater system.

RERC 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 contaminated water from being discharged to the storm system. This would reduce any potential significant surface water or groundwater contamination and would not result in a significant impact.

#### **G, H, I, J. Housing in 100-Year Flood Zone: No Impact**

The Proposed RERC project footprint is not located within a Federal Emergency Management Agency designated 100-year flood zone. No housing or structures would be created that would impede or redirect 100-year flood flows. Stormwater discharge would be routed to the stormwater basin, which has adequate capacity as described above, and therefore should not cause or contribute to flooding potential. As an inland project not near any large water body or hillslope, inundation by seiche, tsunami, or mudflow is not likely to occur.

#### **K, L, N, O, P. Water service and Sewer and treatment plant capacity: No impact**

The applicant has stated that the City of Riverside is going to provide potable water for domestic and fire water supply needs, as well as recycled water for all process water and landscape watering needs. The WWTP would accept domestic wastewater from the project, process wastewater would be sent to the ZLD system. The City has the capacity to supply the project with potable water, sewer service, and recycled water. No impacts are expected.

### **WATER USE REPORTING**

Staff analysis of significant impacts requiring either avoidance or mitigation to less than significant related to water consumption by power plants is based on both the source and volume of the water used. This analysis is based on a defined maximum amount of water use from a particular source. Condition of Exemption **WATER-1** is included to monitor and report water consumption to ensure that the maximum amount of water use analyzed is not exceeded.

The following excerpt from the CEC 2003 Integrated Energy Policy Report further addresses the legal basis for water use, monitoring and reporting by CEC licensed or exempted power plants:

*Water conservation is of paramount importance to the state. Indeed, conserving fresh water and avoiding its wasteful use have long been part*

*of the state's water policy, as reflected in the State Constitution, Article X, Section 2. Because power plants have the potential to use substantial amounts of water for evaporative cooling, the Energy Commission has the responsibility to apply state water policy to minimize the use of fresh water, promote alternative cooling technologies, and minimize or avoid degradation of the quality of the state's water resources.*

*The Warren-Alquist Act reiterates state water policy in terms of conserving water and using alternative sources of water supply: It is further the policy of the state and the intent of the Legislature to promote all feasible means of energy and water conservation and all feasible uses of alternative energy and water supply sources.*

## **CUMULATIVE IMPACTS**

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The project has the potential to cumulatively add to the depletion of fresh water and to degrade water quality. The use of recycled water and ZLD along with the proper use of BMPs reduces to a level of less than significant the potential for the project to impact fresh water supply or water quality.

The project will not combine with the potential expansion of the WWTP to cause a significant impact to water resources since the WWTP will not be using recycled water it will be creating the recycled water. The expansion of the WWTP will not interfere with the WWTP's ability to supply recycled water or receive domestic wastewater from the project.

The project is not expected to contribute to cumulative hydrology or water quality impacts.

## **RESPONSE TO AGENCY AND PUBLIC COMMENTS**

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**CRWQCB-1:** The California Regional Water Quality Control Board sent a letter dated May 27, 2004 to James W. Reede Jr. at the CEC, stating they would be interested in the expected chemical quality of the stormwater runoff and the measures the applicant will take to ensure the project complies with the Basin Plan. The letter also commented on some of the Board's permits that the applicant may have to comply with or obtain from the Board (RWQCB 2004a).

**Staff Response:** *Staff is in agreement with the Board on the permitting issue. The project owner must comply with all federal, state and local LORS. Staff has determined that only non-contact stormwater will be discharged to the detention basin. Contact stormwater will be recycled for plant use. Water discharged from the detention basin will be directed to the WWTP for processing.*

**ACE-1:** The Department of the Army, Los Angeles District, Corps of Engineers sent a letter dated July 16, 2004 to James W. Reede Jr. at the CEC. The letter lists some of the activities that would require a 404 permit from the Army Corps (ACE 2004a).

**Staff Response:** *The project owner must comply with all federal, state and local LORS.*

**CURE-1:** At the draft initial study workshop a member of CURE questioned the runoff coefficients used by the applicant in determining the detention basin size. The coefficients were supplied in the response to Data Request 53. It was suggested that coefficients from Natural Resources Conservation Service (NRCS) be used to confirm the coefficients used by the applicant.

**Staff Response:** *Staff questioned the use of a runoff coefficient at the data response workshop. The applicant responded that the coefficient was taken from the "Standard Handbook for Civil Engineers" table 21.15 and a coefficient for railroad yards was selected because they typically have gravel surfaces (RERC 2004e). Staff believes this is an appropriate coefficient based on the current site condition. Staff confirmed all the coefficients selected by the applicant with the "Standard Handbook for Civil Engineers", the NRCS Hydraulic Design Manual and the Caltrans Highway Design Manual. The applicant's selection of runoff coefficients is consistent with these publications. Staff believes the runoff coefficients used by the applicant are appropriate.*

**CURE-2:** At the draft initial study workshop a member of CURE questioned the use of a 50-year storm of one hour duration in determining the detention basin size. The member of CURE wanted to know why a storm of longer duration was not used (e.g. 50-year storm of 24-hour duration).

**Staff Response:** *The detention basin is designed to mitigate the difference in pre- and post-construction peak flow from the project site from a 50-year storm of one hour duration. The peak flow will be increased due to the addition of impervious surfaces at the project site. As the soil becomes saturated the difference in pre- and post-construction peak flow decreases. Staff believes the detention basin is correctly sized to retain the difference in peak flow from a 50-year storm of one hour duration.*

*The applicant informed staff that the calculations for determining the size of the storm water retention basin were based on Standard Urban Storm Water Mitigation Plan (SUSMP) requirements for LA County. LA County regulations were used as a guideline because they are generally more stringent and conservative than other counties in California. LA County SUSMP regulations require that the first 3/4 inch of water from any storm event be contained onsite prior to discharge. The applicant exceeded the county requirements by using 1.1 inches of rain in their calculations, to determine that the approximate size of the retention basin would be 10,000 cubic feet. The value of 1.1 inches of rain is from the tables shown in the SWPPP for a 50 year storm of one hour duration. A 50 year storm event was selected based on what is typical for this area of California in terms of design of public works for storm water conveyance systems. Based on experience, municipal systems are not designed for storm events with a recurrence interval greater than 50 years, so designing a feeder system with capacity greater than the receiving system would not be practical.*

*The Regional Water Quality Control Board (Santa Ana Region) does not have a regulation stating the size of the storm event to be used in determining the peak flow. Staff analyzed the stormwater drainage system to determine if significant environmental*

*impacts to water resources might occur. Staff has determined that no significant environmental impact will occur based upon the current design of the detention basin and the information that overflow from the detention basin will be discharged to the WWTP. The WWTP will act as a second detention basin holding back the peak flow from the project and preventing the project from increasing the peak flow to the Santa Ana River*

**CURE-3:** “The Project lacks sufficient stormwater runoff retention capacity. Infiltration basins such as that proposed by the Applicant have a failure rate of 50% after five years. Yet, neither the Applicant nor the draft initial study has proposed a maintenance program suitable for continued operation of the infiltration bed. Therefore, this measure does not constitute feasible or effective mitigation for the actual level of stormwater runoff. This is a significant unmitigated impact that renders the Project ineligible for an SPPE.”

**Staff Response:** *The monitoring and maintenance of the detention basin and the other BMPs will be included in the SWPPP as required by the RWQCB. Staff has not seen the data used to determine a 50 percent failure rate. To assume this basin will fail within five years is to assume the RWQCB will not enforce their regulations and permits. Staff believes the proposed detention basin is adequate and will remain adequate for the life of the project to retain the difference in pre and post construction peak flow from a 50-year storm of one hour duration. As with all BMPs, monitoring is necessary. Staff does not believe the unsupported assertion that the basin will fail constitutes a significant adverse impact to the environment.*

## **CONCLUSIONS**

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The RERC project as proposed and regulated by the responsible government authorities would result in less than significant impacts to the public and the environment.

## **PROPOSED CONDITIONS OF EXEMPTION**

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**WATER-1** The project owner shall install metering devices and record on a monthly basis the amount of water used by the project. The report on the monthly water use shall include the monthly range and monthly average of daily usage in gallons per day, and total water used by the project on a monthly and annual basis in acre-feet. Following the first full year of operation and in subsequent years, the annual summary shall also include the yearly range and yearly average water used by the project.

**Verification:** The project owner shall include a water summary use report in the Annual Compliance Report submitted to the CPM for the life of the project.

## **REFERENCES**

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RERC (Riverside Energy Resource Center) 2004a: Application for Small Power Plant Exemption. Submitted to the California Energy Commission on April 26, 2004.

Cited in the text as: (RERC 2004a)

RERC (Riverside Energy Resource Center) 2004b: Applicant's Phase I Environmental Site Assessment. Submitted to the California Energy Commission on June 8, 2004.

Cited in the text as: (RERC 2004b)

RERC (Riverside Energy Resource Center) 2004c: Applicant's Data Responses 1 - 72. Submitted to the California Energy Commission on June 14, 2004.

Cited in the text as: (RERC 2004c)

RERC (Riverside Energy Resource Center) 2004e: Applicant's Supplemental Data Responses. Submitted to the California Energy Commission on June 25, 2004.

Cited in the text as: (RERC 2004e)

RWQCB (Regional Water Quality Control Board) 2004a: Letter sent to James W. Reede Jr. Dater May 27, 2004

Cited in the text as: (RWQCB 2004a)

ACE (Army Corps of Engineers) 2004a: Letter sent to James W. Reede Jr. Dater July 16, 2004

Cited in the text as: (ACE 2004a)

# LAND USE

Testimony of Amanda Stennick

## INTRODUCTION

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

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

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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 Zoning Ordinance. 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 Riverside County General Plan as part of the analysis. For a discussion of LORS associated with the Riverside Municipal Airport land use consistency, potential project-related impacts and mitigation, please refer to the **TRAFFIC and TRANSPORTATION** section of this Staff Assessment.

## CITY OF RIVERSIDE ZONING ORDINANCE

The City of Riverside is currently updating its General Plan, Zoning, and Subdivision Ordinances. The process was initiated in April 2003 and the City expects to complete the update by October 2004. The Zoning Ordinance update will not affect the proposed project or the current zoning designation of the proposed project site.

Zoning is the specific administrative tool used by a jurisdiction to regulate land use and development, and is one of the primary tools for implementing the goals and policies of the General Plan. Zoning is typically more specific than the General Plan and includes detailed land use regulations and development standards. The City's Zoning Ordinance divides the land in the city into zones that permit different types of uses and imposes development standards appropriate to the uses permitted in each zoning district. **LAND USE Figure 1** shows the zoning districts in the area of the proposed project site. The project site is located in the Manufacturing Park (MP) zoning district. The zoning along the transmission line is MP and single family residential (R-1-65). A conditional use permit would be required for power plant development in the MP zoning district; a conditional use permit is not required for the transmission line in either zone.

## CITY OF RIVERSIDE GENERAL PLAN

The City of Riverside is currently updating its General Plan, Zoning, and Subdivision Ordinances. The process was initiated in April 2003 and the City expects to complete the update by October 2004. The General Plan update will not affect the proposed project or the current Land Use designation of the proposed project site.

Land use is controlled and regulated by a system of plans, policies, goals, and ordinances that are adopted by the various jurisdictions with land use authority over the

area encompassed by the proposed project. The general plan is a broadly scoped planning document and defines large-scale planned development patterns over a relatively long period of time.

The Riverside General Plan includes specific policies to preserve and enhance existing development and to provide for orderly and appropriate new development of the City of Riverside through the year 2010. Actions and approvals required by the City of Riverside Planning Department must be consistent with the Riverside General Plan.

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. The land use designation for the portion of the transmission line route from Fremont Street to the Mountain View substation is Medium High Density Residential (RMH).

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.

Policy LU 1.7. The City should protect industrially designated areas from encroachment by incompatible land uses and from the effects of incompatible land uses in adjacent areas. Uses adjacent to planned industrial areas should be compatible with the planned industrial uses and should employ appropriate site design, landscaping, and building design to buffer the non-industrial uses.

**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 in a safe, reliable, environmentally sensitive, and fiscally responsible way, while minimizing total utility costs over the long run.

## **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

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### PROJECT LOCATION AND DESCRIPTION

The proposed site is situated on Payton Avenue, north of Jurupa Avenue, and is owned by the City of Riverside. The project will consist of a 96-megawatt power plant, 1.75 miles of 69kV transmission line, and natural gas and water supply interconnections. A 140-foot natural gas service line will be constructed from the existing Sempra transmission pipeline at the northeast corner of the site to the on-site gas meter station. The transmission line will be located in an existing right-of-way, and will run south along Payton Avenue, east along Jurupa Avenue, and southeast along Shepard Street to the Mountain View substation. The power plant and associated administration building and warehouse will occupy eight acres of the 12-acre site with the additional four acres reserved for equipment storage and construction storage.

In the land use analysis, staff also considered demographic information on environmental justice populations from **SOCIOECONOMICS FIGURE 1**. The census block where the project is located contains a neighborhood comprised of between 75.0 percent and 100.0 percent people of color. The nearest residences within this block are west, within one mile of the project site. Immediately south of the project site (and within the census block) is a dog kennel with a single-family residence within one-quarter mile of the project site. Staff does not know whether the residence is occupied full-time or is used by employees of the business during business hours.

The overall percentage of people of color within the six-mile radius of the project is 57.25 percent. The number of persons in poverty within the six-mile radius is 15.3 percent.

## **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.

Existing land uses along the proposed 69kV transmission line include industrial uses and single-family residences.

## **RECREATIONAL FACILITIES**

Unincorporated lands of Riverside County lie immediately 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 will 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 but no project-related facilities will be built nor transmission lines sited within the Park. 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 the one-mile radius of the project site but no project-related facilities will be built nor transmission lines sited within the Country Club.

## **IMPACTS**

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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.

<b>ENVIRONMENTAL CHECKLIST</b>	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>LAND USE AND PLANNING -- Would the project:</b>				
A. Physically divide an established community?				<b>X</b>
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?				<b>X</b>
C. Conflict with any applicable habitat conservation plan or natural community conservation plan?				<b>X</b>
<b>RECREATION</b>				
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?				<b>X</b>
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?				<b>X</b>

## **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. However, the project would normally require a conditional use permit under the M-P zoning. Staff has proposed Condition of Exemption 1, which will ensure project consistency with the City of Riverside Zoning Ordinance. With implementation of Condition of Exemption 1, no significant adverse impacts to land use will occur.

The proposed route for the 69kV transmission line is in existing public rights-of-way currently used for the public streets. Construction of the transmission line would be consistent with established zoning, and would not divide or disrupt existing land uses or an established community. Therefore, no impacts would occur.

#### **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. The proposed RERC project is consistent with City of Riverside goals and policies described above.

The proposed project will not be situated on or near the bluffs of the Santa Ana River, nor will it restrict common access or views to the River. No utility lines will be placed within the River Corridor. For these reasons, the proposed project will be consistent with the County of Riverside goals and policies described above.

The objective of the proposed project is to provide electricity for the City of Riverside's population and is part of the City of Riverside's Capital Improvements Program. Given this objective, and the proposed project's consistency with the applicable LORS of affected jurisdictions, there would be no impact.

**C. Conflict with Habitat or Natural Community Conservation Plans: No Impact**

There are no habitat conservation plans or natural community conservation plans adopted by the jurisdictions that would be affected by the proposed project. Therefore, the proposed project would not conflict with existing plans and there would be no impact.

**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 part of the City of Riverside's Capital Improvements Program, the proposed project is not expected to generate or result in an increase in the population of the area. Staff has concluded that since the regional workforce will be able to accommodate the RERC construction labor needs, the project will not increase the area's population (See the **SOCIOECONOMICS** Section 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. In addition, staff spoke with Mr. Ron Baxter of the Riverside County Regional Park and Open Space District about the Hidden Valley Wildlife Area and the proposed RERC's potential impacts on the park. Mr. Baxter stated that his concerns were the project's potential impacts to wildlife and wildlife habitat.

Please refer to the section on **BIOLOGICAL RESOURCES** for a discussion of potential impacts and mitigation.

## **CUMULATIVE IMPACTS**

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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**

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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. With implementation of Condition of Exemption 1, the proposed use would be consistent with the provisions of the City of Riverside zoning ordinance. Therefore, there are no impacts associated with Land Use and Planning Policies.

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 impacts.

## **PROPOSED CONDITIONS OF EXEMPTION**

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**LAND-1** The project owner shall prepare a site development plan that complies with the applicable design criteria and performance standards for the Manufacturing Park (MP) zoning district set forth in the City of Riverside Zoning Ordinance. The site development plan must contain the following features:

- Setbacks (i.e. yard area requirements) for structures;
- Building elevations;
- Landscaping requirements;
- Temporary and permanent signs for project identification; permanent and construction phase signs);and
- Permanent parking lot design, showing the quantity and dimension of spaces.

Following preparation of the above site development plan, the project owner shall design and construct the project consistent with the applicable design criteria and

performance standards for the Manufacturing Park (MP) zoning district set forth in the City of Riverside Zoning Ordinance.

**Verification:** At least 60 days prior to the start of construction, the project owner shall concurrently submit the site development plan to the CPM and the City of Riverside Planning Department. The material submitted to the CPM must include documentation that the City of Riverside Planning Department has been given the opportunity to review and comment on the plan and its compliance or conformance the above-referenced requirements.

Monthly Compliance Reports submitted to the CPM must contain a written statement from the CBO that the project is being constructed in compliance with the site development plan.

## **REFERENCES**

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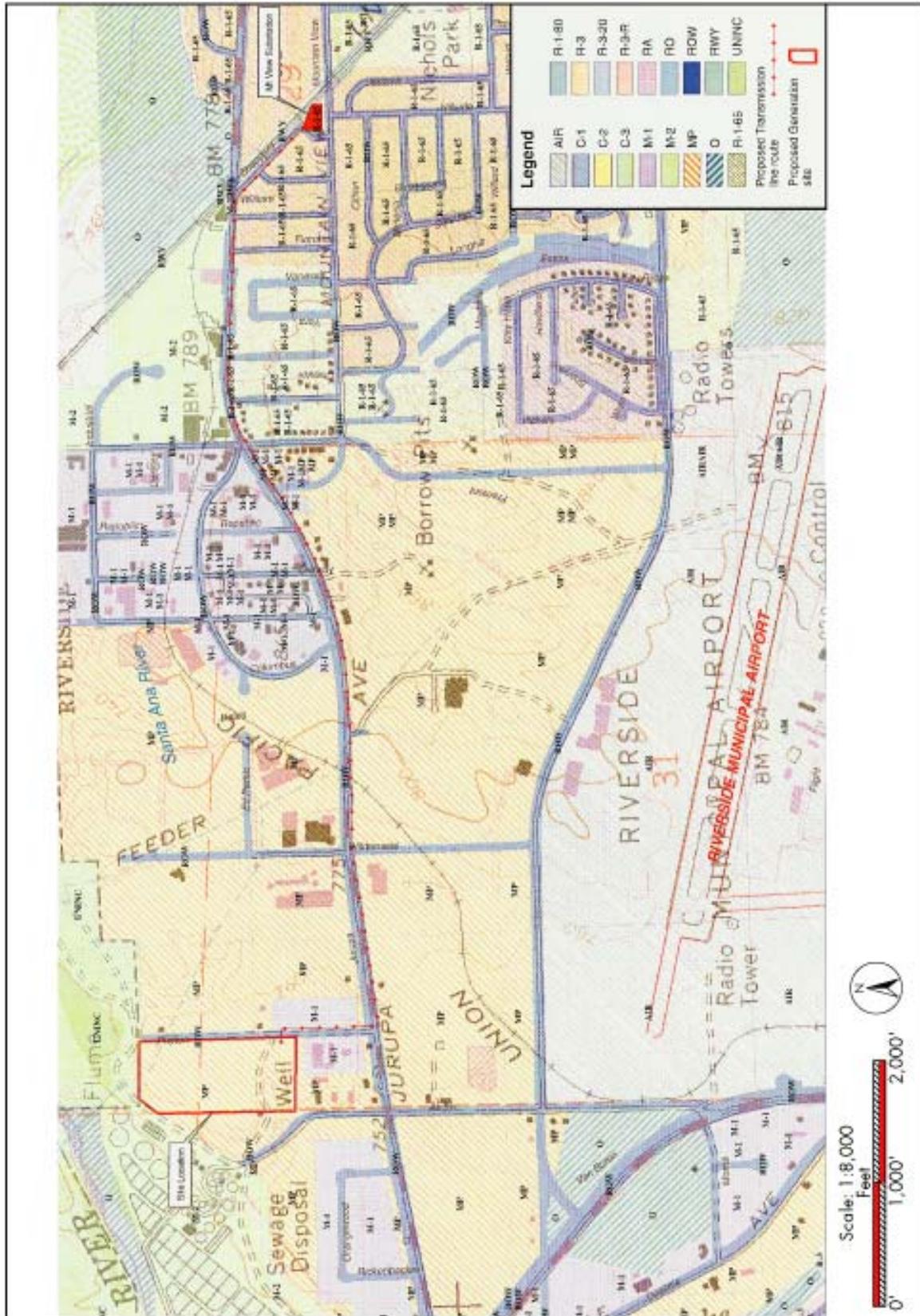
Baxter, Ron. Natural Resource Manager, Riverside County Regional Park and Open Space District. Personal communication with Amanda Stennick on June 16, 2004.

Hayes, Steve. City of Riverside Planning Department. Personal communication with Amanda Stennick on June 9, 2004.

**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.

**LAND USE - Figure 1**  
 Riverside Energy Resource Center - Zoning Classification



JULY 2004

LAND USE

# NOISE AND VIBRATION

Testimony of Shahab Khoshmashrab and Steve Baker

## INTRODUCTION

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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 operation or construction practices, such as pile driving. The ground-borne 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 (RERC) Project, and to recommend any procedures necessary to ensure that the resulting noise and vibration adverse impacts would be adequately mitigated.

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

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In this study, the discussion of compliance with applicable LORS is used only to determine impact under the California Environmental Quality Act (CEQA), as discussed below.

### FEDERAL

Under the Occupational Safety and Health Act of 1970 (OSHA) (29 U.S.C. § 651 et seq.), the Department of Labor, Occupational Safety and Health Administration (OSHA) has adopted regulations (29 C.F.R. § 1910.95) designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise exposure levels as a function of the amount of time to which the worker is exposed (see **NOISE Appendix A, Table A-4**, 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 Federal Transit Administration (FTA) has published guidelines for assessing the impacts of ground-borne vibration associated with construction of rail projects, which have been applied by other jurisdictions to 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 ground-borne vibration. The FTA measure of the threshold of perception is 65 VdB (velocity expressed in terms of decibels), 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 government 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.

## LOCAL

The noise levels generated by the RERC will 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 hour time period). According to these criteria, the threshold for nighttime noise levels for residential receptors is 45 dBA  $L_{50}$  (RERC 2004a, SPPE Table 6.7-3) (see **NOISE 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 pm to 7 am)
	55 (7 am to 10 pm)
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 55 dBA between 7 a.m. and 10 p.m. or 45 dBA between 10 p.m. and 7 a.m. (RERC 2004a, SPPE § 6.7.4).

## SETTING

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### PROJECT BACKGROUND

The RERC Project would be a nominal 96 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, and three natural gas fuel compressors. Included in the project would be approximately 9,000 feet of electric transmission interconnection line, an approximately 140 foot natural gas interconnection line, and a short water supply line from the adjacent City of Riverside's Waste Water Treatment Plant (WWTP) (RERC 2004a, SPPE §§ 1.1, 1.2.2, 1.2.4, 1.2.5, 1.2.6, 2.1, 2.2, 2.5, 2.5.1, 2.6, 2.7, 2.12).

### EXISTING LAND USE

The RERC would be located in the City of Riverside, adjacent to the City's WWTP, in a light Industrial/manufacturing area (RERC 2004a, SPPE §§ 1.2.1, 1.2.3, 2.1, 2.2, 6.2.1.1, 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 2004a, SPPE § 6.7.1.1; Table 6.7-2). 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 WWTP, and the WWTP's 3.3 MW cogeneration facility (RERC 2004a, SPPE § 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 2004a, SPPE § 6.7.3; Table 6.7-1; Appendix 6.7). (Note that, for purposes of predicting project noise impacts, it is assumed that the project's noise will 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: Figure 1** for the location of monitoring site LT-1.

**NOISE: Table 2** is the applicant's summary of the ambient noise measurement results at LT-1 (RERC 2004a, Table 6.7-1).

**NOISE: Table 2**  
**Applicant's Summary of Measured Ambient Noise Levels**

Measurement Site	Measured Noise Levels, dBA <sup>1</sup>		
	L <sub>eq</sub>	L <sub>90</sub>	L <sub>50</sub>
LT-1	60	42	45

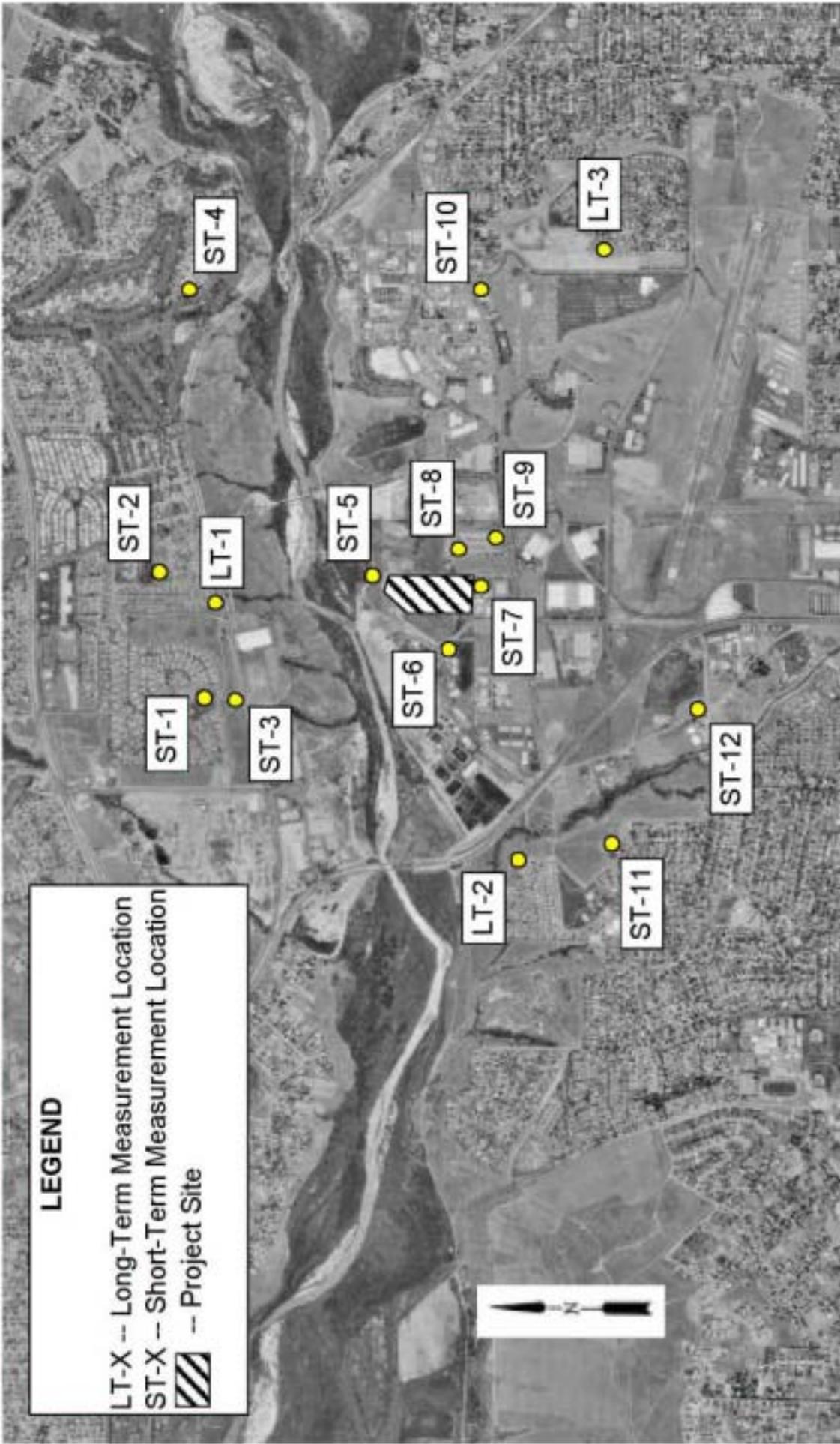
<sup>1</sup> Microphone at 1<sup>st</sup> floor elevation (five feet above ground) (RERC 2004a, Appendix 6.7)

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<sub>90</sub>) 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**

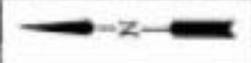
Measurement Site	Measured Noise Levels, dBA Nighttime (12 a.m.—4 a.m.) <sup>1</sup>		
	L <sub>eq</sub>	L <sub>90</sub>	L <sub>50</sub>
LT-1	49	39	40

<sup>1</sup> Staff estimate, employing the four quietest consecutive hours (RERC 2004a, Appendix 6.7).



**LEGEND**

- LT-X -- Long-Term Measurement Location
- ST-X -- Short-Term Measurement Location
-  -- Project Site



## **IMPACTS**

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### **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.

<b>ENVIRONMENTAL CHECKLIST</b>	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>NOISE – Would the project result in:</b>				
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 ground borne 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 RERC will be approximately nine months. 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 (Riverside County General Plan Noise Element and the City of Riverside Municipal Code) do not limit the loudness of construction noise, but staff compares the projected noise levels to the ambient. In this case, since construction will 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 2004a, SPPE Table 6.7-5).

**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 the RERC and its associated linear facilities will 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 will occur on Sundays or federal holidays. These time frames comply with the local regulations (RERC 2004a, § 6.7.6.2; City of Riverside 1968).

As seen in **NOISE: Table 4** above, project construction is expected to increase the noise level at this location by 5 dBA, a noticeable but not generally annoying increase. Because construction noise is temporary in nature and construction activities will 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 will 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. 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 42 dBA  $L_{eq}$  (RERC 2004a, Appendix 6.7). 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 interprets as a less than significant impact. Note that this level of noise from the project would constitute a much larger increase above the ambient background ( $L_{90}$ ) level, about 11 dBA. In the case of a recreational trail, however, unlike with residential uses, staff compares project noise to the  $L_{eq}$ . This is justified in two ways. First, staff believes the 20-minute short-term ambient measurement at the trail may have been biased. The presence of a human holding a noise monitoring device would tend to suppress bird and insect noises, thus driving down the ambient measurement. The actual ambient level may be, in fact, considerably higher. This use of an energy average figure ( $L_{dn}$ , which is similar to  $L_{eq}$ ) was accepted by the Energy Commission in their decision on the Metcalf Energy Center project (CEC 2001, p. 404, 3<sup>rd</sup> paragraph). Second, staff does not treat users of a recreational trail as sensitive noise receptors (see CEC 2001, footnote 137 on p. 399). Staff thus concludes that cumulative noise levels of 51 dBA at the trail represent an increase of only 5 dBA, which represents 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 2004a, SPPE Appendix 6.7). 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 of Predicted Operational Noise Levels**

Measurement Site	Noise Levels, dBA			
	Nighttime Ambient <sup>1</sup>	Project <sup>2</sup>	Cumulative	Change
LT-1	39 L <sub>90</sub>	42 L <sub>eq</sub>	44 L <sub>eq</sub>	+5

<sup>1</sup> Staff's summary of measured ambient levels (**NOISE: Table 3**).

<sup>2</sup> Applicant's estimate (RERC 2004a, SPPE Table 6.7-6).

It is seen from these figures that the increase above the four-hour nighttime average background noise level (L<sub>90</sub>) 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 2004a, 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 RERC 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 RERC 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 2004a, SPPE §§ 6.7.7.1, 6.7.8.2). 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 2004a, SPPE § 6.7.6.2; Appendix 6.7).

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 will occur during daytime hours, the noise effect of plant construction is considered to be less than significant.

##### **Linear Facilities**

Construction of the linear facilities will 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 2004a, SPPE Table 6.7-7). The use of powered equipment in proximity to residences will cause increases in ambient noise levels. However, because the increase in noise levels is of a temporary nature, and because construction noise will 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 2004a, SPPE §§ 6.7.7.2, 6.7.8.2).

#### **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 relatively quiet and generally steady state in nature. Therefore, noise levels from the RERC, 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**

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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 the RERC. Staff is aware of no work involved with the WWTP Capital Improvement Project that would likely combine with RERC noise to cause significant cumulative impacts.

## **CONCLUSIONS AND RECOMMENDATIONS**

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Energy Commission staff concludes that the RERC 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**

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**NOISE-1** At least 15 days prior to the start of ground disturbance, the project owner shall notify all residents within  $\frac{3}{4}$  mile of the site and  $\frac{1}{2}$  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-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 to operation of the project during the quietest 4-hour period will not exceed 44 dBA when measured at residential receivers at noise monitoring location LT-1; that noise due 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 to plant operations 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 percent 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 44 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 (04-SPPE-1)		
<b>NOISE COMPLAINT LOG NUMBER</b> _____		
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).

## RESPONSES TO AGENCY COMMENTS

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The following are the applicant's and agency's comments made on the **Noise and Vibration** portion of the Draft Initial Study at the Draft Initial Study Workshop held on July 15, 2004, and staff's responses to these comments:

### **The Applicant:**

Page 4: Figures cited were based on 2<sup>nd</sup> floor measurements, not 1<sup>st</sup> floor.

**Staff's Response:** Staff disagrees. Table 6.7-1 of the application lists these values as those obtained at 1st floor level.

Page 4: Impacts were predicted based on  $L_{eq}$ , not  $L_{90}$ .

**Staff's Response:** Staff compares project operational noise to the ambient background level. We do not employ the applicant's analysis methods.

Page 9: 3<sup>rd</sup> paragraph under the heading, "Power Plant Operation," 42 dBA  $L_{90}$  should be 42 dBA  $L_{eq}$ .

**Staff's Response:** Staff agrees. See pages 9 and 10, incorporating this revision.

Page 10: Increase should be +2 dBA, not +5 dBA.

**Staff's Response:** The analysis methods used by staff yield +5 dBA.

### **California Unions for Reliable Energy:**

Construction noise is assumed acceptable because it is limited to the hours 7 a.m. to 7 p.m. But Air Quality allows work beyond these 12 hours on occasion (see **AQC-5**). Conform?

**Staff's Response:** The applicant should obtain a variance from the City of Riverside before performing any noisy construction activities beyond the hours designated in the City Noise Ordinance (City of Riverside 1968, § 7.35.010) (see page 9, 3<sup>rd</sup> paragraph).

Page 10: 2<sup>nd</sup> paragraph lists noise mitigation measures, and the paragraph following **NOISE: Table 5** mentions these mitigation measures. Are these all the measures to be employed? How will we be assured that they are all employed?

**Staff's Response:** Staff explained that we are not concerned with the specific measures employed, only with the final result, i.e., that the plant is no noisier than expected. Condition of Exemption **Noise-3** sets a performance standard that the project cannot exceed. Staff's analysis concluded that this standard is obtainable by the project as proposed and that it will result in a less than significant impact.

Pages 12-13: **Noise-1** requires measuring octave band levels. But there is no benchmark. Should we require measuring them before construction?

**Staff's Response:** Staff suggests we leave that up to the applicant. If post-operation monitoring shows tonals, then the applicant would be required by the Condition of Exemption to fix the problem. If it turned out to be caused by sources other than the project, the applicant would need to perform appropriate monitoring to demonstrate the fact. There would thus be some (slight) risk to the applicant if it chooses not to monitor

pre-operation. Under either scenario the impact would be less than significant with mitigation.

Page 13: **Noise-2** establishes a complaint resolution process, but there is no requirement to notify people of the process or the phone number to call. Should we require this public notice?

**Staff's Response:** Staff agrees. See above, Condition of Exemption **NOISE-1**.

Page 9: Table 4 assumes noise attenuation of 17 dBA from the noise barrier. How do we ensure this? Staff explained that we are interested in results, not means. Then, should we require post-operational monitoring on the trail?

**Staff's Response:** Staff agrees. See revised Condition of Exemption **NOISE-3** (formerly **NOISE-1**).

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## NOISE 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 A-1** 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, they 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 what 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 (Effects of Noise on People, U.S. Environmental Protection Agency, December 31, 1971).

In order to help the reader understand the concept of noise in decibels (dBA), **Noise Table A-2** has been provided to illustrate common noises and their associated sound levels, in dBA.

**Noise Table A-1**  
**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 <sub>10</sub> , L <sub>50</sub> , & L <sub>90</sub>	The A-weighted noise levels that are exceeded 10%, 50%, and 90% of the time, respectively, during the measurement period. L <sub>90</sub> is generally taken as the background noise level.
Equivalent Noise Level, L <sub>eq</sub>	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 <sub>dn</sub> 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.

<b>Noise Table A-2 Typical Environmental and Industry Sound Levels</b>			
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.

*Except under special conditions, a change in sound level of one dB cannot be perceived. Outside of the laboratory, a three dB change is considered a barely noticeable difference. A change in level of at least five dB is required before any noticeable change in community response would be expected.*

*A ten 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 three dB increase (i.e., the resultant sound level is the sound level from a single passing automobile plus three dB). The rules for decibel addition used in community noise prediction are:

Noise Table A-3 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  $\pm 1$  dB.

Source: Architectural Acoustics, M. David Egan, 1988

### **Sound and Distance**

Doubling the distance from a noise source reduces the sound pressure level by six dB.

Increasing the distance from a noise source ten 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:

**Noise Table A-4**  
**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 C.F.R. § 1910.95

# PUBLIC HEALTH

Testimony of Obed Odoemelam, Ph.D.

## INTRODUCTION

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The purpose of staff's public health analysis is to determine if toxic air contaminants from routine operation of the proposed Riverside Energy Resource Center (RERC) will have the potential to cause significant adverse public health impacts in the surrounding area. If potentially significant health impacts are identified, staff will evaluate the mitigation measures necessary to reduce such impacts to insignificant levels. Impacts on public and worker health from accidental releases of hazardous materials are examined in the **Hazardous Materials Management** section. This **Public Health** section is organized to include a description of the method for analyzing potential health impacts, the criteria used to determine their significance, and a brief characterization of RERC along with discussions regarding selected checklist items addressing the topical areas of concern. It concludes with staff's recommended conditions of exemption to monitor and mitigate the project, as staff considers necessary.

## METHOD OF ANALYSIS

Staff is concerned about 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, dermal contact, or ingestion via contaminated food or water.

Air pollutants for which no air quality standards have been set are called noncriteria pollutants. Unlike criteria pollutants such as ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide, noncriteria pollutants have no ambient (outdoor) air quality standards that specify levels considered safe for everyone.

Since noncriteria pollutants do not have such standards, a process known as health risk assessment is used to determine if people might be exposed to those types of pollutants at unhealthy levels. The risk assessment procedure consists of the following steps:

1. identifying the types and amounts of hazardous substances that RERC could emit into the environment;
2. estimating worst-case concentrations of project emissions into the environment using dispersion modeling;
3. estimating the amounts of pollutants to which people could be exposed through inhalation, ingestion, and dermal contact; and
4. 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 power plant 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. This approach involves:

- using the highest levels of pollutants that could be emitted from the plant;
- 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 will, 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 (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 percent 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 due to multiple exposure include those cases where the actions may be synergistic or antagonistic (where the effects are greater or less than the sum, respectively) (Id). 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 significant 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 the California Office of Environmental Health Hazard Assessment), 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 lower or even considerably lower than those estimated.

The screening analysis was performed for the proposed RERC to assess the worst-case risks to public health as possible from its 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  $10 \times 10^{-6}$ . 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 significant risk level of ten in one million is consistent with the level of significance adopted by various State Air Pollution Control Districts pursuant to Health and Safety Code § 44362(b), which requires notification of nearby residents when an Air Quality Management District determines that there is a significant health risk from a given facility. The South Coast Air Quality Management (SCAQMD), which has jurisdiction for 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 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**

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This section describes the environment in the vicinity of RERC from the 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 (RERC 2004a, pp. 111, 117, 123, and 129), the proposed RERC site comprises approximately 12 fenced-in acres 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 (RERC 2004a, p 48).

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 0.2-mile area of potentially significant impacts identified by the applicant for all project operations (RERC 2004d, p. 222). 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 (RERC 2004a, p. 48) 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, and results 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 percent 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 proposed RERC site, 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 4, or 250,000 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 proposed project site on May 21, 2003 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 (RERC 2004b).

## 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.

<b>ENVIRONMENTAL CHECKLIST</b>	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:				
Construction		X		
Operations		X		

## ANALYSIS AND DISCUSSION OF IMPACTS

The proposed RERC would be regarded as posing a significant risk to public health if it 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.

### **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 and more fully discussed in the **Waste Management** section of this Initial Study, the absence of 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 will 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.

Based on a number of health effects studies, the Scientific Review Panel on Toxic Air Contaminants (SRP) recommended a chronic REL (see REL discussion in Method of Analysis section above) for diesel exhaust particulate matter of  $5 \mu\text{g}/\text{m}^3$  and a cancer unit risk factor of  $3 \times 10^{-4} (\mu\text{g}/\text{m}^3)^{-1}$  (SRP 1998, p. 6). The SRP did not recommend a value for an acute REL, since available data in support of a value was deemed insufficient. On August 27, 1998, the ARB listed particulate emissions from diesel-fueled engines as a toxic air contaminant and approved SRP's recommendations regarding health effect levels.

Construction of the RERC is anticipated to take place over a period of 9 months (RERC 2004a, p. 316, Appendix J). 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 in Appendices F, G, H, and I. 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 this 9-month construction activities is estimated as approximately 0.62 in one million, which is significantly below the 10 in one million level considered significant by staff and under SCAQMD guidelines.

In order to mitigate potential impacts from particulate emissions during the operation of diesel-powered construction equipment, **Air Quality** staff recommends the use of ultra low sulfur diesel fuel and California Tier 1 diesel engines. As reflected in the information from the applicant, there are no sensitive receptors in the project's immediate impact area. The impacts from such construction activities typically occur within a very short distance of its operation, often within the fenceline as with this project.

### **Operation: Less than Significant with Mitigation Incorporated**

#### **Emissions Sources**

The major emissions sources for the proposed RERC are its two gas turbines and the cooling tower (RERC 2004a, pp. 14 through 29). During operations, potential public health risks would be related to the products of natural gas combustion and trace contaminants present in the raw, non-potable water emitted through the 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 (RERC 2004a, pp. 80 through 82, and Appendices C and J). 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			✓	✓	
Acrolein				✓	✓
Ammonia				✓	✓
Benzene			✓	✓	
Chromium		✓	✓	✓	
1,3-Butadiene			✓		
Ethylbenzene				✓	
Hexane				✓	
Formaldehyde			✓	✓	✓
Napthalene		✓		✓	
PAHs	✓		✓		
Propylene				✓	
Propylene oxide			✓	✓	✓
Sulfate					✓
Toluene				✓	
Xylene				✓	✓
Diesel Particulate			✓	✓	

Source: KRCD 2003a, Ch 5.8, and pp. 9,14.

The next step in the health risk assessment process is to estimate the ambient concentrations of toxic substances in question. For the proposed RERC, 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, or ways in which people might come into contact with

toxic substances, 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 the project, including combustion and noncombustion emissions, resulted in a maximum acute hazard index of 0.006. The chronic hazard index at the point of maximum impact is 0.003. 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.

Total worst-case individual cancer risk from facility operation as shown in **Public Health Table 2** is estimated to be 0.183 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.

**PUBLIC HEALTH Table 2  
Operation Hazard/Risk**

Type of Hazard/Risk	Hazard Index/Risk for Project	Standard Significance Level	Significant?
Acute Noncancer	0.006	1.0	No
Chronic Noncancer	0.003	1.0	No
Individual Cancer	0.183x10 <sup>-6</sup>	10 x 10 <sup>-6</sup>	No

Source: KRCD2003a, Ch5.8, pp. 13 - 17.

### 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 people 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 percent 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 has proposed the use of sodium hypochlorite as a cooling tower biocide (RERC 20034, p. 339). As with other anti-microbial agents, its efficacy in ensuring that bacterial and in particular Legionella growth, is kept to a minimum, is contingent upon 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 prepare and implement a biocide and anti-biological growth agent-monitoring program. 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 RERC 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 0.183 in a million does not represent any real contribution to the noted average lifetime cancer risk of 250,000 in a million. 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 RERC to be either significant or cumulatively considerable.

The worst-case chronic noncancer health impact from the RERC (of 0.003 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 0.006 is below the significance level of 1.0. At these levels, staff does not expect any cumulative health impacts to be significant. 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 does not expect any cumulative health impacts with regards to the proposed cooling tower or the existing cogeneration cooling tower.

## CONCLUSIONS

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Staff has analyzed potential public health risks associated with construction and operation of the proposed RERC. Staff 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

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**Public Health-1:** The project owner shall develop and implement a Cooling Water Management Plan to ensure that the potential for bacterial growth in 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.

**Verification:** At least 30 days prior to the commencement of cooling tower operations, the Cooling Water Management Plan shall be provided to the CPM for review and approval.

## REFERENCES

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- ASHRAE 1998. American Society of Heating, Refrigeration, and Air Conditioning Engineers Legionellosis: Position Statement. June 25.
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- 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.
- RERC (Riverside Energy Resource Center) 2004a. Application for Small Power Plant Exemption. Submitted to the Energy Commission on April 26, 2004.
- RERC (Riverside Energy Resource Center) 2004b. Applicant's Phase 1 Environmental Site Assessment. Submitted to the California Energy Commission on June 8, 2004.
- RERC (Riverside Energy Resource Center) 2004d. Amendments to the Air Quality and Public Health Sections of the Application for Small Power Plant Exemption. Submitted to the California Energy Commission on June 14, 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**

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This California 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 (RERC) project on local communities, community resources, and public services. The RERC project power plant will be owned and operated by City of Riverside Public Utilities (RPU), a local public agency.

## **LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

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### **CALIFORNIA GOVERNMENT CODE, SECTIONS 65996-65997**

These sections include provisions for school district levies against development projects. As amended by SB 50 (Stats. 1998, ch. 407, sec. 23), these sections state that public agencies may not impose fees, charges, or other financial requirements to offset the cost for school facilities.

## **SETTING**

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### **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 Standard Metropolitan Statistical Area (SMSA).

Riverside County population was 1,545,387 in 2000 and is projected to be 2,817,600 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 1,980,000 in 2000 and is projected to be 2,800,900 in 2020 which is also higher than the statewide growth rate over that time period. The City of Riverside had a 2000 population of 255,166. **SOCIOECONOMICS Table 1** shows the historical and projected populations for the study area and the state.

**SOCIOECONOMICS Table 1  
Historical and Projected Populations**

Area	1990 Population	2000 Population	2010 Population	2020 Population
Riverside County	1,170,413	1,545,387	2,159,700	2,817,600
City of Riverside	226,505	255,166	N/A	N/A
San Bernardino County	1,709,434	1,980,000	2,231,600	2,800,900
California	29,760,021	33,871,648	40,262,400	45,821,900

Source: Department of Finance (DOF), and US Census, 1990, 2000 and June 2001.

**SOCIOECONOMICS Table 2** shows the minority and low-income populations within the six-mile radius of the proposed project, the City of Riverside, Riverside County, and the state.

**SOCIOECONOMICS Table 2  
2000 Minority and Persons below Poverty Level**

Area	% Minority	% Persons below poverty level
Six-mile radius	57.52	15.03
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: US Census 2000

The minority population within six-miles of the site is 57.52 percent, which is somewhat higher than the 54.4 percent minority population of the City of Riverside and the state. The population below the poverty level is 15.03 percent within six miles of the site, which is lower than the 15.8 percent 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 lower than the unemployment rate for the state.

**SOCIOECONOMICS Table 3: Employment Data January 2004 (Preliminary)**

Area	Labor Force	Employment	Unemployment	Unemployment Rate (%)
Riverside County	831,000	784,600	46,500	5.6
San Bernardino County	886,900	838,100	48,800	5.5
California	17,460,000	16,297,500	1,162,400	6.7

Source: EDD 2004 (Riverside County and California not seasonally adjusted.).

Data from the RPU application (Table 6.12-8) for 2000 show that the highest employment sectors in Riverside County are services (30.5 percent), retail trade (18.1 percent) and government and government enterprises (13.7 percent). Data from the RPU application (Table 6.12-9) for 2000 also show that the highest employment sectors in San Bernardino County are services (29.4 percent), retail trade (18.3 percent), and government and government services (16.3 percent). The labor pool, the Riverside/San

Bernardino SMSA, 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 facility would require nine months of labor, average 41 workers on-site, and require a maximum of 53 workers during the sixth (peak) month of construction. The tentative schedule would begin in late 2004, with completion in July 2005.

**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 SMSA, and the maximum needed by the RERC project per month. According to the application and labor data obtained from the EDD, there is generally sufficient labor force available in the Riverside/San Bernardino SMSA to find the required construction trades.

**SOCIOECONOMICS: Table 4**  
**Project Monthly Construction Labor By Craft**  
**(Includes generation and transmission work)**

Job Category	1 <sup>st</sup> Month	2 <sup>nd</sup> Month	3 <sup>rd</sup> Month	4 <sup>th</sup> Month	5 <sup>th</sup> Month	6 <sup>th</sup> Month	7 <sup>th</sup> Month	8 <sup>th</sup> Month	9 <sup>th</sup> Month
Insulation Workers							2	2	1
Boilermakers				2	4	2			
Carpenters	4	6	8	8	4	2	2	1	
Electricians	4	6	8	8	8	6	4	3	2
Ironworkers	2	4	6	6	4	2			
Laborers	4	4	6	6	4	4	3	3	2
Millwrights				2	4	4	2	1	1
Operating Engineers (Industrial Engineers)	3	3	2	2	3	3	3	2	1
Painters							2	4	4
Pipe fitters	2	2	4	4	8	10	10	10	4
Lineman	4	6	6	6	4	2			
<b>Craft Subtotal</b>	<b>23</b>	<b>31</b>	<b>40</b>	<b>44</b>	<b>43</b>	<b>35</b>	<b>28</b>	<b>26</b>	<b>16</b>
Construction Manager	3	3	3	3	3	3	3	3	3
Field Engineer	1	1	3	4	4	6	4	4	2
Document Control Clerical	2	2	2	2	2	2	2	2	2
Commissioning Group						2	4	4	4
<b>Staff Subtotal</b>	<b>6</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>11</b>
<b>Total Project</b>	<b>29</b>	<b>37</b>	<b>48</b>	<b>53</b>	<b>52</b>	<b>48</b>	<b>41</b>	<b>39</b>	<b>26</b>

Source: RERC 2004a.

**SOCIOECONOMICS: Table 5**  
**Available Labor by Skill in the Riverside/San Bernardino**  
**SMSA Region per Year and Maximum Needed By RERC per Month**

<b>Occupational Title</b>	<b>2001 Annual Average</b>	<b>2008 Annual Average (Estimated)</b>	<b>Maximum Needed Per Month</b>
Insulation Workers	130	230	2
Boilermakers	310	440	4
Carpenters	18,380	26,250	8
Electricians	5,360	8,020	8
Ironworkers	1,240	1,790	6
Laborers	1,300	2,000	6
Millwrights	190	230	4
Operating Engineers / Industrial Engineers	530	600	3
Painters/Construction and Maintenance	2,870	4,130	4 painters
Plumbers, Pipe fitters, and Steamfitters	2,990	4,120	10 pipe fitters
Lineman (Electrical Power-Line)	700	930	6
Field Engineers	N/A	N/A	6
Document Control Clerical	1,980	2,210	2
Commission Group	N/A	N/A	4

Source: EDD 2003 and RERC 2004a.

Staff accepts the applicant's position that the Riverside/San Bernardino SMSA is the local labor market and most if not all will be local workers for construction and operation (RERC 2004a).

**Plant Operations Workforce**

According to the application, RERC will use no more than ten 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 is a discussion of each impact and an explanation of the impact conclusion.

<b>ENVIRONMENTAL CHECKLIST</b>	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>SOCIOECONOMICS: POPULATION, HOUSING, AND ECONOMIC (FISCAL AND NON-FISCAL)-- Would the project:</b>				
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 project will require approximately nine months for construction, average 41 workers on-site, and require a maximum of 53 workers during the sixth (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 SMSA, and, if necessary, additional workers can commute from surrounding counties and regions. A small number of construction workers may require temporary lodging in the Riverside/San Bernardino SMSA. 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 SMSA. Thus, the project will 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 project were not provided. However, secondary economic analysis from similar projects in the study area is reported in **Socioeconomic Data and Information Table 2.**

**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 will accompany them for this project. Operational employment is low and may induce a very small population increase. Thus, the project will 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 2000 US Census, total housing stock for Riverside County totaled 584,674. The vacancy rate was 2.5 percent for owners and 7.2 percent for renters. The realty industry considers an average vacancy rate to be five percent. Also, there are 150 hotels/motels located within 25 miles of the City of Riverside. An average of only 41 workers will be on-site during construction. Construction workers and workers in the specialty trades are largely available within the Riverside/San Bernardino SMSA. 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 project 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 ten new full-time employees will be hired to operate the facility.

**D. Displacement of People: No Impact**

No housing or population will be displaced by the proposed project.

**E. Fiscal Effects on Local Government Expenditures, Property and Sales Tax: No Impact**

The applicant estimates the RERC total project cost to be approximately \$75 million, with the value of materials and supplies purchased locally (within the Riverside/San Bernardino SMSA) estimated at about \$5 to \$10 million. Because RERC is a local public agency, it is exempt from property taxes. Therefore, the project will 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 fifty percent within a six-mile radius of the proposed RERC project (please refer to **Socioeconomics Figure 1** in this Staff Assessment), and Census

2000 information that shows the low-income population is less than fifty percent within the same radius.

#### **G. Police Protection: No Impact**

Because there will be little or no in-migration of construction workers, staff does not expect significant 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.). Finally, the RERC is a small project that is not likely to provide much demand for police protection.

#### **H. Schools: No Impact**

There will be little or no in-migration of construction worker families and staff does not expect significant impacts to schools. Also, the RERC is a local public agency, and is exempt from school impact fees. Therefore, the project will 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**

Because there will be little or no in-migration of construction workers, staff does not expect significant impacts to medical and other public services

### **CUMULATIVE IMPACTS**

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The applicant researched and made contacts at the local level and did not uncover any major industrial projects or groupings of small projects planned in the local labor market area, the Riverside/San Bernardino SMSA (Clark and Lincoln 2004, per. comm.) other than an ongoing Capital Improvement Project at the City-owned Waste Water treatment Plant. This information has been filed in dockets and is part of the public record. Furthermore, the RERC is a relatively small power plant project with no direct, indirect, or cumulative significant negative socioeconomic impacts. Therefore, staff concludes that there are no cumulative impacts.

### **CONCLUSIONS**

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There are no other planned major industrial development projects in the study area, other than the ongoing Capital Improvement Project at the City-owned Waste Water treatment Plant, that are anticipated to occur during construction of the RERC. In addition, it is a relatively small power plant with no significant negative socioeconomic impacts. Hence, staff concludes that there are no direct, indirect, or cumulative negative significant socioeconomic impacts. However, there are positive socioeconomic benefits such as construction and operation payroll and sales tax.

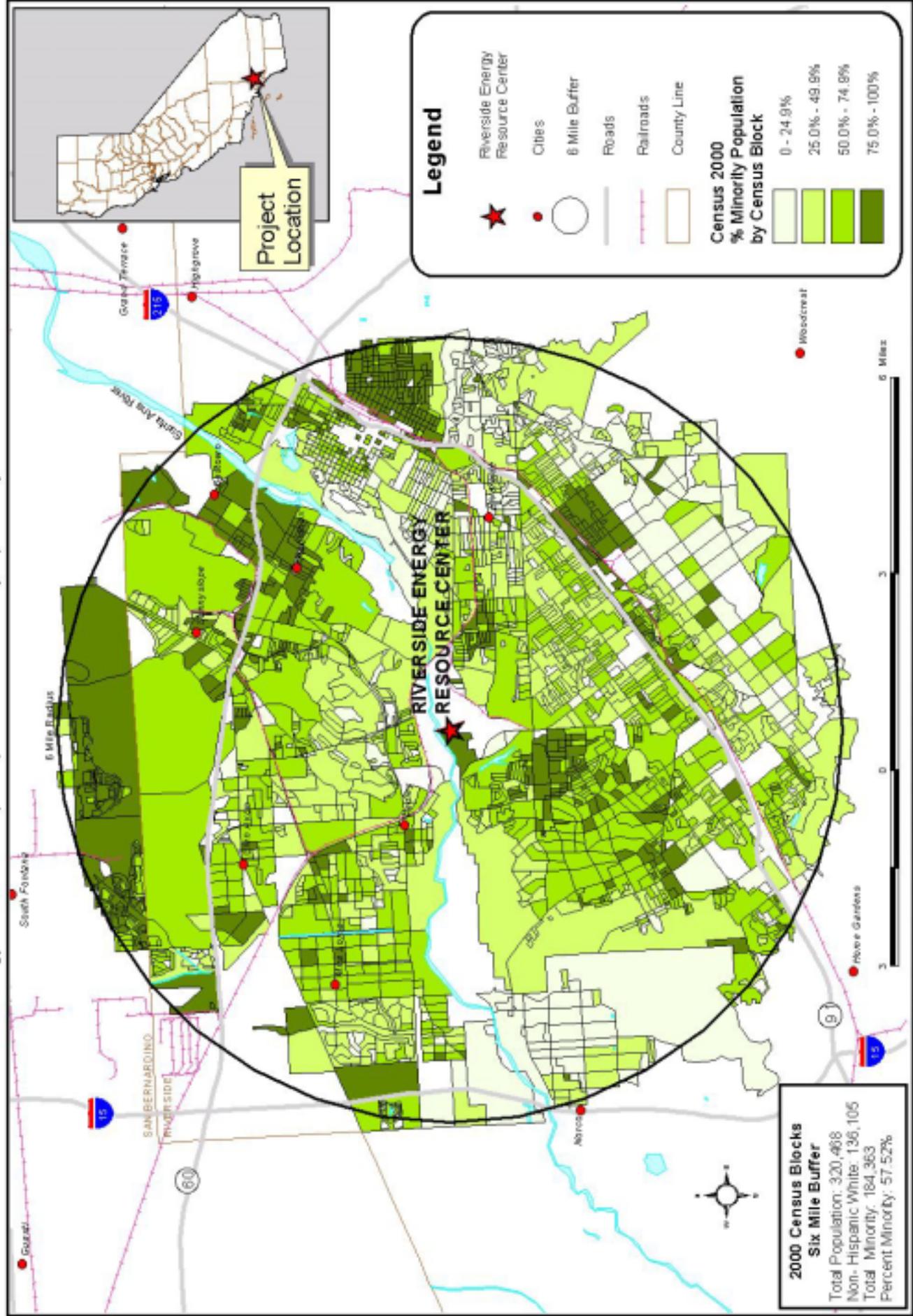
### **PROPOSED CONDITIONS OF EXEMPTION**

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None proposed.

**SOCIOECONOMICS - FIGURE 1**

Riverside Energy Resource Center (RERC) - Census 2000 Minority Population by Census Block - Six Mile Buffer



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2004  
 SOURCE: California Energy Commission Statewide Transmission & Power Plant Maps 2004, Census 2000 PL 94-171 Data - Matrix PL2

**SOCIOECONOMICS - FIGURE 2**  
 Riverside Energy Resource Center (RERC) - Census 2000 Minority Population by Census Block - One and Two Mile Buffer



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2004  
 SOURCE: California Energy Commission Statewide Transmission & Power Plant Maps 2004, Census 2000 PL 94-171 Data - Matrix PL2



**SOCIOECONOMIC DATA AND INFORMATION – TABLE 2<sup>1</sup>**

Total Project Costs	\$75 million
<b>Estimate of Locally Purchased</b> (Within Riverside/San Bernardino SMSA) <b>Equipment and Material</b>	
Construction	About \$5-10 million
Operation	N/A
Estimated Annual Property Taxes	None. Exempt since RERC is a local public agency.
Estimated School Impact Fees	None. Exempt since RERC is a local public agency.
<b>Direct Employment</b>	
Construction (Average)	41 jobs
Operation	10 jobs
<b>Secondary Employment</b> (indirect and induced impacts)	
Construction	Estimated to be 30 to 60 workers. <sup>2</sup>
Operation	N/A
<b>Payroll</b> (For the Riverside/San Bernardino SMSA)	
Construction	Total: \$2.8 million
Operation	N/A
<b>Estimated Sales Taxes</b>	
Construction	Total: \$3 million
Operation	N/A
Existing/Projected Unemployment Rates	Existing - 5.6 percent in January 2004, (not seasonally adjusted for Riverside County). (Preliminary estimate.) Projected - N/A
Percent Minority Population (6 mile radius)	57.52 percent
Percent Poverty Population (6 mile radius)	15.03 percent

<sup>1</sup> Table 2 uses nominal 2004 dollars (ROC 2004) and construction is for 9 months. There is no estimate of project capital costs.

<sup>2</sup> This estimate uses a multiplier of 1.5 to 2 from secondary sources which staff finds acceptable since it is close to a range of 2 to 2.5 that many economists find acceptable in the long run (Moss et al. 1994). 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. Also, a workforce of 60 workers was used for the estimate of secondary workers. Finally, the economic impact analysis estimate is for the two-county region of the Riverside/San Bernardino SMSA. Most of the economic impact would be in Riverside County and especially the City of Riverside.

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# TRAFFIC & TRANSPORTATION

Testimony of David Flores

## INTRODUCTION

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The Traffic and Transportation Analysis of the Riverside Energy Resource Center (RERC) 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 Airport Land Use Plan, and the effects of air traffic patterns in the vicinity of the project.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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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 will have a significant adverse impact on the environment. The Applicant has indicated its intent to comply with all federal, state, and local laws, ordinances, regulations and standards (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, Sections 31303-31309, regulates the highway transportation of hazardous materials, the routes used, and restrictions thereon.
- Sections 31600-31620 regulate the transportation of explosive materials.

- Sections 32000-32053 regulate the licensing of carriers of hazardous materials and include noticing requirements.
- Sections 32100-32109 establish special requirements for the transportation of substances presenting inhalation hazards and poisonous gases.
- Sections 34000-34100 establish special requirements for the transportation of flammable and combustible liquids over public roads and highways.
- Sections 34500, 34501, 34501.2, 34501.3, 34501.4, 34501.10, 34505.5-7, 34506, 34507.5 and 34510-11 regulate the safe operation of vehicles, including those which are used for the transportation of hazardous materials.
- Sections 2516 et seq. addresses the safe transport of hazardous materials.
- Sections 2500-2505 authorize the issuance of licenses by the Commissioner of the California Highway Patrol for the transportation of hazardous materials including explosives.
- Sections 13369, 15275, and 15278 address the licensing of drivers and the classifications of licenses required for the operation of particular types of vehicles. In addition, the possession of certificates permitting the operation of vehicles transporting hazardous materials is required.
- California Streets and Highways Code, Sections 117 and 660-72, and California Vehicle Code, Sections 35780 et seq., require permits for the transportation of oversized loads on county roads.
- California Streets and Highways Code, Sections 660, 670, 1450, 1460 et seq., 1470, and 1480, regulates right-of-way encroachment and the granting of permits for encroachments on state and county roads.
- In accordance with Section 21400 of the California Vehicle Code, and per the California Department of Transportation (Caltrans), all construction within the public right-of-way will need to comply with the "Manual of Traffic Controls for Construction and Maintenance of Work Zones."

## **LOCAL**

The 1994 City of Riverside General Plan identifies roadway definitions, level of service<sup>1</sup>, standards for traffic, and other transportation modes including transit service, bicycle circulation network, inter-city rail service, and air service (City of Riverside 1994). The City of Riverside's policies and Riverside County's policies related to traffic and circulation needs are identified.

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

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<sup>1</sup> 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.

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.

### **Comprehensive Land Use Plan (CLUP) for the Riverside Airport**

The *Comprehensive Land Use Plan for the Riverside Airport, Riverside County, California (CLUP)* was adopted by the Riverside County Airport Land Use Commission (ALUC) in 1998. The purpose of the CLUP is to protect and promote safety and welfare of residents of the airport vicinity and users of the airport while ensuring the continued operation of the airport.

## **SETTING**

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The major highways in the area of the project site are State Route (SR) 91, SR-60 and Interstate 15. The local roadways potentially affected by the proposed project are Payton Avenue, Jurupa Avenue, Acorn Street, and Van Buren Boulevard. Payton Avenue, Jurupa Avenue and Van Buren Boulevard would provide the primary connection to the project site from SR-60 (see **Traffic and Transportation Figure 1**). The project site is located on Payton Avenue, approximately 1000 feet north of Jurupa Avenue. The critical roads and highways in the area of the project site are:

Pomona Freeway (SR-60) is located approximately 6 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 Payton Avenue to the project site. Van Buren Boulevard provides a partial interchange at SR-60.

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 Payton Avenue to the project site. SR-91 is approximately 4 miles to the south of the project site. Both SR-60 and 91 are under the jurisdiction of the California Department of Transportation (Caltrans). At Van Buren Boulevard, SR-91 carries approximately 107,000 vehicles per day and is rated LOS D.

Van Buren Boulevard is a north-south four-lane roadway with a divided median 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<sup>2</sup>" roadway by the City.

Payton Avenue is a north-south 50-60 foot wide (approx.) public right-of-way that contains a two-lane paved road with each lane approximately 24-feet in width. Payton Avenue is designated a “minor collector<sup>3</sup>” roadway by the City.

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 by the City.

## **Airport**

The City of Riverside owns the Riverside Municipal Airport, which is located approximately 0.5 miles 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 approximately 5,400-feet long and 2,851-feet long. Approximately 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 trailer park. Flight operations occur on an infrequent basis at the airport.

## **Railroad**

The Union Pacific Railroad operates an active main line approximately one mile east 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 either for construction or during the operational phase of the project.

## **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 2 miles southwest of the Project site, and Norte Vista High approximately 1.4 miles west of the Project site. The schools

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<sup>2</sup> Major and Minor Collectors - Major collectors consist of one of two designs: 1) a major collector can carry four lanes of traffic within an 84 foot right-of-way, or 2) a major collector can carry four lanes of traffic and two bicycle lanes within a 94 foot right-of-way.

<sup>3</sup>Minor collectors consists of one of two designs: 1) a minor collector can carry two lanes of traffic within a 60-foot right-of-way, or 2) a minor collector can carry two lanes of traffic with bicycle lanes within a 70-foot right-of-way.  
Source: City of Riverside General Plan – Transportation Element, 1994.

are remote from the project site and are not located along roadways with any project related traffic. The bus routes designated by the school district do not run along Jurupa Avenue within the project vicinity; therefore, no school bus routes will 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 will not conflict with bicyclists using the Class 1 Bike trail system.

## **PROJECT FEATURES**

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This project would include the construction of a short distance potable water line, stormwater and wastewater discharge lines, and a natural gas pipeline. The proposed locations of these lines would be within the project area as interconnections with the existing adjacent wastewater treatment plant and small cogeneration plant facilities. There will also be construction within the City's right-of-way to upgrade an existing 69-kV transmission line along Jurupa Avenue. The installation of a new 69-kV transmission line will also take place from Jurupa Avenue north on Sheppard Avenue to the existing Mountain View Substation, owned by the City of Riverside.

## **IMPACTS**

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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.

<b>ENVIRONMENTAL CHECKLIST</b>	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>TRANSPORTATION/TRAFFIC -- Would the project:</b>				
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)?		<b>X</b>		
B. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?		<b>X</b>		
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?		<b>X</b>		
D. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				<b>X</b>
E. Result in inadequate emergency access?				<b>X</b>
F. Result in inadequate parking capacity?				<b>X</b>
G. Create a significant hazard to the public or the environment through the routine transportation of hazardous material?			<b>X</b>	

## **DISCUSSION OF IMPACTS**

### **A. Increase in Traffic: Less than Significant with Mitigation Incorporated**

The project is expected to generate 35 daily round trips (based on 40 workers) during the average construction period for nine months, and 45 daily round trips (based on 53 workers) during the peak construction period, which will last two months. This assumes that 25 percent of the workers will carpool and the remainder of the workers will drive alone. Operation of the RERC will require five additional full-time staff (RERC 2004a, pg. 253).

The level of service at the Acorn Street and Jurupa Avenues intersection would remain at LOS B, and the intersection of Van Buren Boulevard and Jurupa Avenue would remain at LOS C with the addition of project construction traffic. The applicant has stated that the construction contractor will prepare a construction traffic control plan and implementation program that addresses timing of heavy equipment, building material deliveries, signing, lighting, traffic control device placement, and establishes work hours outside of peak traffic periods. This should be done in coordination with the City of Riverside Public Works Department and Caltrans as appropriate.

The traffic control plan mentioned above would also cover the construction of the project's transmission line features. It would also include a discussion about the use of flagmen and signage for temporary lane closures. In addition, this traffic control

plan will include timing of linear facilities construction to take place outside peak traffic periods to avoid traffic flow disruptions.

**B. Exceed Established Level of Service Standards: Less than Significant with Mitigation Incorporated**

The addition of RERC project traffic will 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. Each of these roads is expected to operate at an acceptable level of service with the addition of project construction traffic (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). Staff has concluded that these affected roadways will experience no significant and/or adverse impacts from this project as both have sufficient capacity to absorb all project-generated traffic. The applicant has agreed to repair any road that is damaged during construction to its original condition to the extent possible (RERC 2004a, pg. 254).

Construction of the project's linear facilities will require short-term lane closures on local roadways, which will result in a temporary impact. Potential decreases in service levels resulting from these lane closures and mitigation options to keep impacts at a minimum, will be discussed in the construction traffic control plan (see **Condition of Exemption Trans-1**).

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 will 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 project's consistency with the adopted *Comprehensive Land Use Plan (CLUP) for the Riverside Airport*, and found it consistent with the airport operations in the area. Further discussion on the ALUC recommendations is addressed later in this analysis.

Staff has reviewed the SPPE application for consistency and compatibility with the CLUP. In addition, staff spoke with Mr. Kranenburg, the airport director for the Riverside airport, and discussed its preliminary assessment of any flight patterns which may occur over the proposed power plant site. He indicated that the main runway is Runway 9-27 and used by both Lear type jets and small aircrafts.

**Transportation Figure 2** shows all of the Riverside Airport flight paths in relation to the RERC project site.

Runway 9-27 is situated at an easterly-westerly direction and is the primary runway due to its length (5400 feet). Jets that use this runway make a straight approach, whereas small aircrafts will make 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. Mr. Kranenburg indicated that Runway 16 flight pattern is west of the plant site, and is not in the flight pattern (See **Figure B** - Flight Pattern Map).

On July 28, 2004 staff contacted Mr. Kranenburg to discuss when the pilots use Runway 16; how far do they extend into the flight path before proceeding with a left traffic pattern. He indicated that they are required to run the entire length of the traffic pattern, proceed upwards to above 300-feet, and then make the left hand turn pattern. The 300-foot requirement was required under the noise abatement section of the Land Use Ordinance relative to noise issues with surrounding properties. By the time they make their left turn pattern, they will be beyond the power plant site. He further indicated that if any flights occur over the power plant, they will be at a height of 1,000 feet above the ground level, which is a sufficient flight distance, and should not provide an air space disturbance for pilots when the power plant is operational.

In a letter dated July 12, 2004, Mr. Kranenburg did raise concerns that although the 80-foot transmission poles along Jurupa Avenue were just under the FAA 20:1 slope and airspace obstruction criteria designated for Runway 16, he strongly encouraged the installation of red obstruction lights on the transmission line poles, and on the 80-foot cooling towers. Mr. Kranenburg also recommended obstruction markers (beach balls) on the transmission lines in the area identified in the B-1 (Inner Approach Departure Zone) B2 (Adjacent to Runway Zone) and C (Extended Approach/Departure Zone), as identified in the Riverside County Airport Land Use Compatibility Plan Policy Document. He further stated that a high number of Riverside County Sheriff's Department helicopter operations occur in the area of the proposed power plant and the measures stated above will provide an added margin of safety to the airport operations and airport users. Mr. Kranenburg will also issue an advisory in the FAA Airport Facility Directory with height restrictions after the plant is constructed stating that small aircraft and helicopters should avoid flying directly over the cooling towers (See **Conditions of Exemption Trans-4**). Staff discussed the recommendations of the airport manager with the applicant's representatives at the July 15, 2004 Draft Initial Study Workshop, and they acknowledged the recommendation. Staff has prepared **Condition of Exemption Trans-2** which addresses the airport safety requirements.

On July 15, 2004, the Riverside County ALUC held a public hearing to review County staff's recommendation for consideration of the power plant and consistency findings with the adopted airport land use plan. The ALUC acknowledged that the proposed power plant is consistent with the Riverside Municipal Airport Comprehensive Land Use Plan, and recommended the applicant provide the following: an Avigation Easement<sup>2</sup> in accordance with the Airport Land Use Plan; install hooded or shielded outdoor lighting to prevent reflection into the sky; prohibit the use of steady or flashing lights, other than FAA-approved navigational signal

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<sup>2</sup> Avigation Easement is an overflight easement that is recorded with the appropriate parcel acknowledging existing and potential future restrictions of the use of the property due to the proximity to the airport.

lights; prohibit any use which would generate smoke or water vapor or which would attract large concentrations of birds; and prohibit any use that would generate electrical interference that may be detrimental to the operation of aircraft. The installation of obstruction lighting and markings on towers and power lines was a recommendation by the City of Riverside Airport Director.

Staff has addressed the installation of obstruction lighting for the cooling towers and power poles in **Condition of Exemption Trans-2**. Staff has prepared **Condition of Exemption Trans-3** which addresses the Avigation Easement requirement. The installation of hooded or shielded lighting and reflection from the power plant buildings is addressed in the Visual Resources section of this report.

In early July 2004, the applicant filed the FAA Form 7460. This is to comply with Federal Law which virtually every construction project from grading terrain to erecting buildings or towers, which extends 200-feet or greater above natural terrain or is located within 5 miles of an airport, requires filing of a notice with the Federal Aviation Administration. Since the Riverside Municipal Airport is located 0.5 miles south of the RERC site, the filing of the FAA Form 7460 is required. No structures proposed for the RERC project will be above the 200-foot criteria. Staff reviewed the information contained in the FAA application and found the application to be consistent with federal rules regarding physical obstruction of navigable air space.

To date, Energy Commission staff has not received the FAA's written determination on the applicant's filing of an FAA Form 7460. In discussions with the applicant at the July 15, 2004 draft Initial Study workshop, the applicant agreed that any forthcoming conditions by the FAA will be adhered to. Based on the recommendations by the Riverside Airport Manager and the Riverside County Land Use Commission, it can be anticipated that any conditions recommended by the FAA will be similar in nature to those identified by the aforementioned agencies. This is because the 80-foot transmission poles are just below the 20: 1 slope criteria designated for Runway 16, and the FAA may require the installation of beach ball markers as a precautionary measure. Therefore staff is satisfied that the mitigation measures identified in **Condition of Exemption Trans-2** will be sufficient to address the FAA concerns.

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 will produce 60 Hz EMF outside the plant but these EMF levels will be localized to the transmission lines and will 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 will run primarily during the months of May through October when the average temperature is 72° F.

As described in the SPPE's Project and Facility Description (SPPE Section 2, pg.12), the RERC project is proposed to be a simple cycle power plant that would include two 80-foot-tall combustion exhaust stacks and a 42-foot-tall three-cell chiller/cooling tower package.

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. No significant visual impacts are anticipated due to the very low frequency of occurrence of the combustion exhaust water vapor plumes.

The primary cooling load of the cooling towers would be the inlet air chillers. The cooling towers 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's evaluation of the RERC cooling tower visible water vapor plumes is based on recent modeling conducted by staff for the Los Esteros Critical Energy Facility (LECEF), also a simple-cycle power plant with similarly operated cooling towers. The LECEF cooling tower load is four times the load of RERC, and the humidity of the LECEF project area (San Jose) is much higher than it is in Riverside. Based on this comparison, staff can conclude that the cooling tower plume potential for the RERC project would be very low and any plumes that would form would be expected to be small. Therefore, RERC plumes would not result in a significant navigational impact.

On July 16, 2004, the California Department of Transportation, Division of Aeronautics submitted a letter in response to the RERC project. In summary, they requested that the applicant submit a FAA Form 7460, that the project and its technical studies be referred to the Riverside County Airport Land Use Commission for their review and consistency finding, that a thermal plume study be conducted, and finally, a determination by the Commission that the project is a compatible use in the vicinity of the Riverside Airport. In all instances, the applicant has addressed these concerns, and they are addressed in this analysis.

In summary, staff has addressed the concerns of the Airport Director and has recommended **Condition of Exemption Trans-2**. The project is consistent with the Riverside County Airport Land Use Commission guidelines and is outside the key safety zones. In addition, the airport has a tower with air traffic control staff, so pilots can receive voice reminders to avoid the power plant if needed. The plant will only run part of the year during peak demand times, and it is unlikely that the power plant will run during the morning hours when plume formations are most prone to occur. If plumes do occur because of morning start up of the power plant, the plume

formation will be minimal due to the combustion exhaust temperature ranges explained earlier in this report.

**D. Increase in Traffic Hazards: No Impact**

Some delays and traffic congestion (i.e., blockage of through traffic) impacts may occur with heavy construction vehicles driving west on Jurupa Avenue and Van Buren Boulevard. This issue has been addressed and mitigated in the traffic control plan, by requesting that the applicant schedule heavy vehicle equipment and building deliveries during off-peak hours. As noted earlier, the traffic control plan will also address and include measures to minimize possible traffic delays along the transmission line route along Jurupa Avenue to Sheppard Avenue. Therefore, construction traffic will 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 14<sup>th</sup> Street, and is approximately 5 miles southeast of the project site. 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.

The applicant has also indicated its intent to maintain emergency access on Jurupa Avenue and Sheppard Street during construction of the transmission line facilities.

**F. Inadequate Parking Capacity: No Impact**

Approximately 48 parking spaces will be provided at the RERC project site for construction site personnel and visitors. This area will be sufficient for the number of workers proposed during the construction phase of the project.

**G. Transportation of Hazardous Material: Less Than Significant Impact**

The construction and operation of the plant will 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 will 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 Payton Avenue 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**

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The Riverside Municipal Airport is within a redevelopment zone, and construction of new hangars and airport service facilities are underway. The Waste Water Treatment Plant is in the second year of six-year Capital Improvement Program that is designed to upgrade and maintain the cogeneration plant and WWTP. The Program targets for the cogeneration plant include replacement of the cooling tower in FY 2004-2005 prior to commence of construction of the proposed project and ongoing operations and maintenance of existing equipment. In addition to on-site improvements, sewer upgrade projects are proposed throughout the city, but are not within the transportation routes discussed in this analysis. Based on the RERC application and input from the City of Riverside, it is unlikely that construction, material deliveries, or workforce commutes related to the projects occurring at the waste water treatment plant and the airport would occur during the same period as for the RERC project. Therefore, staff concludes that there will be no significant cumulative impacts.

## **CONCLUSIONS**

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Provided that the Applicant develops a 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 will result in less than significant impacts as to traffic and transportation issues.

## **PROPOSED CONDITIONS OF EXEMPTION**

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**TRANS-1** The project owner shall develop 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; 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.

The construction traffic control plan shall include measures to minimize traffic impacts associated with the construction of the associated linear facilities and shall include information on:

- signing, lighting, and traffic control device placement;
- temporary travel lane closures;
- maintaining access to adjacent residential and commercial properties;
- emergency access.

**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 transmission poles shall have red obstruction lights so that the stacks and transmission poles do not create a hazard to air navigation. The transmission towers shall also have obstruction markers (orange beach balls) and shall be Federal Aviation Authority (FAA) approved. The transmission pole red obstruction lights and orange obstruction markers on the transmission lines shall be in the area as identified in B1 (Inner Approach/Departure Zone), B-2 (Adjacent to Runway Zone), and C (Extended Approach/Departure Zone), as defined in Table 2A in the Riverside County Airport Land Use Compatibility Plan Policy Document (April 2004).

**Verification:** At least 30 days prior to the start of transmission line mobilization, the project owner shall provide supporting documents on how the project plans to comply with stack lighting and marking requirements imposed by the City of Riverside Airport and the Riverside County Airport Land Use Commission.

**TRANS-3** The project owner shall ensure that an Avigation Easement is prepared in accordance with the Riverside Airport Land Use Commission criteria.

**Verification:** At least 60 days prior to the start of construction, the project owner shall submit an Avigation Easement to the Riverside County Land Use Commission staff for review and for recordation purposes, and a copy of the recorded document forwarded to the CPM for review and approval.

**TRANS-4** The project owner shall contact the Riverside Airport Director to insure that a request is submitted to the Federal Aviation Administration (FAA) to modify the existing remark in the Airport Facility Directory (AFD) to advise pilots not to fly over the power plant.

**Verification:** The project owner shall include in its Monthly Compliance Reports during construction documents that reflect that the request to the FAA has been initiated, and provide a status report of their progress in modifying the AFD document.

## **REFERENCES**

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AIRNAV: Riverside Municipal Airport. Complete aeronautical information about the Riverside Municipal Airport. June 10, 2004. Site address: [www.airnav.com/airport/ral](http://www.airnav.com/airport/ral)

City of Riverside. City of Riverside General Plan 2010, 1994.

CALTRANS 2004a: California Department of Transportation, Division of Aeronautics Comment letter, submitted to the California Energy Commission on July 16, 2004.

CITY OF RIVERSIDE AIRPORT 2004a: Airport Director letter submitted to the California Energy Commission on July 12, 2004.

COUNTY OF RIVERSIDE AIRPORT LAND USE COMMISSION STAFF REPORT  
2004a: Submitted to the California Energy Commission on July 15, 2004.

Gonzales, Jackie. Riverside County Airport Land Use Commission staff. Personal communication with David Flores. June 25, 2004 and July 7, 2004.

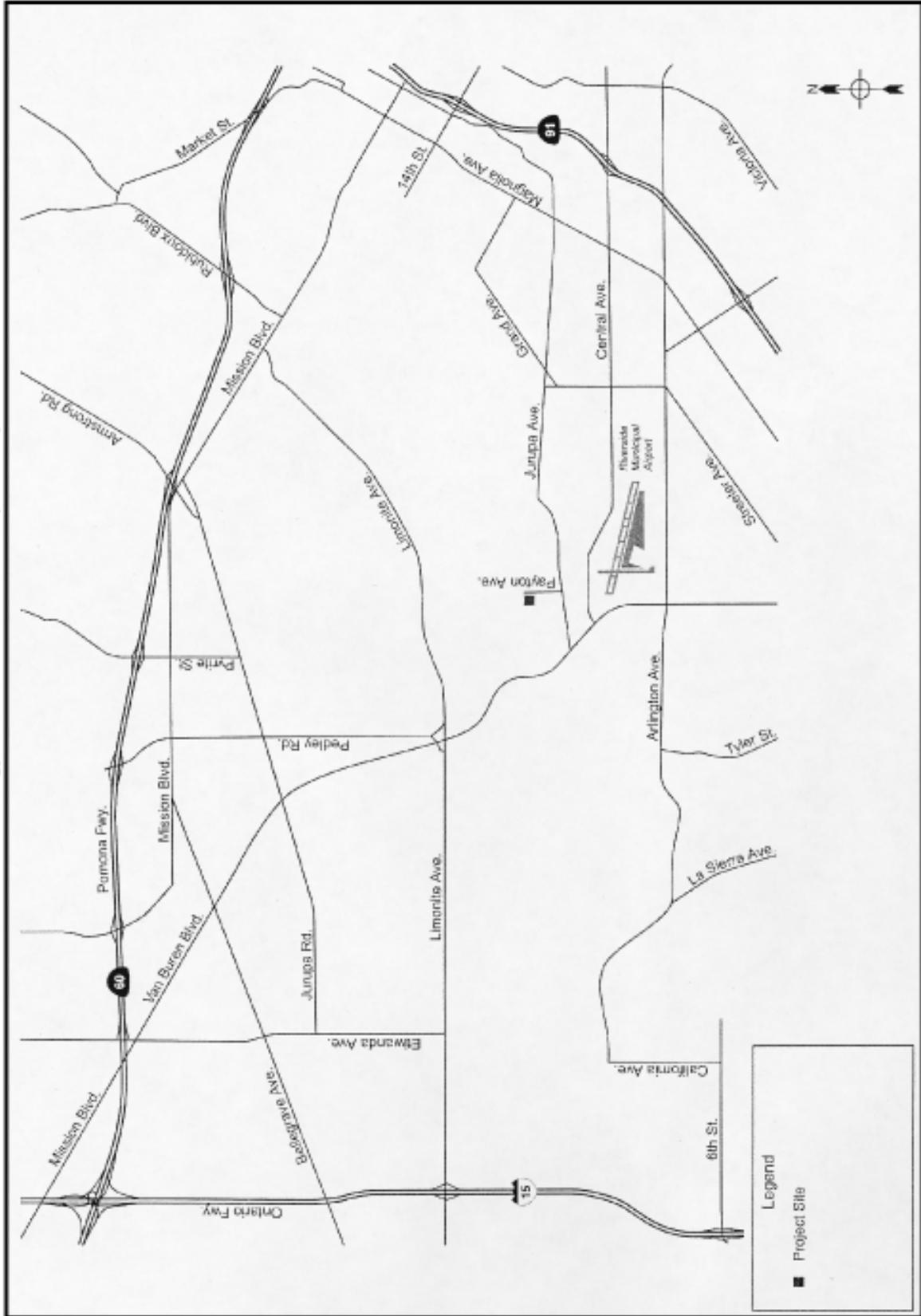
RERC (Riverside Energy Resource Center) 2004a: Application for Small Power Plant Exemption. April 26, 2004.

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Riverside County Regional Transportation Plan 2001.

Riverside Municipal Airport, Comprehensive Land Use Plan. 1998.

**TRAFFIC AND TRANSPORTATION - FIGURE 1**  
 Riverside Energy Resource Center - Traffic Impact Study

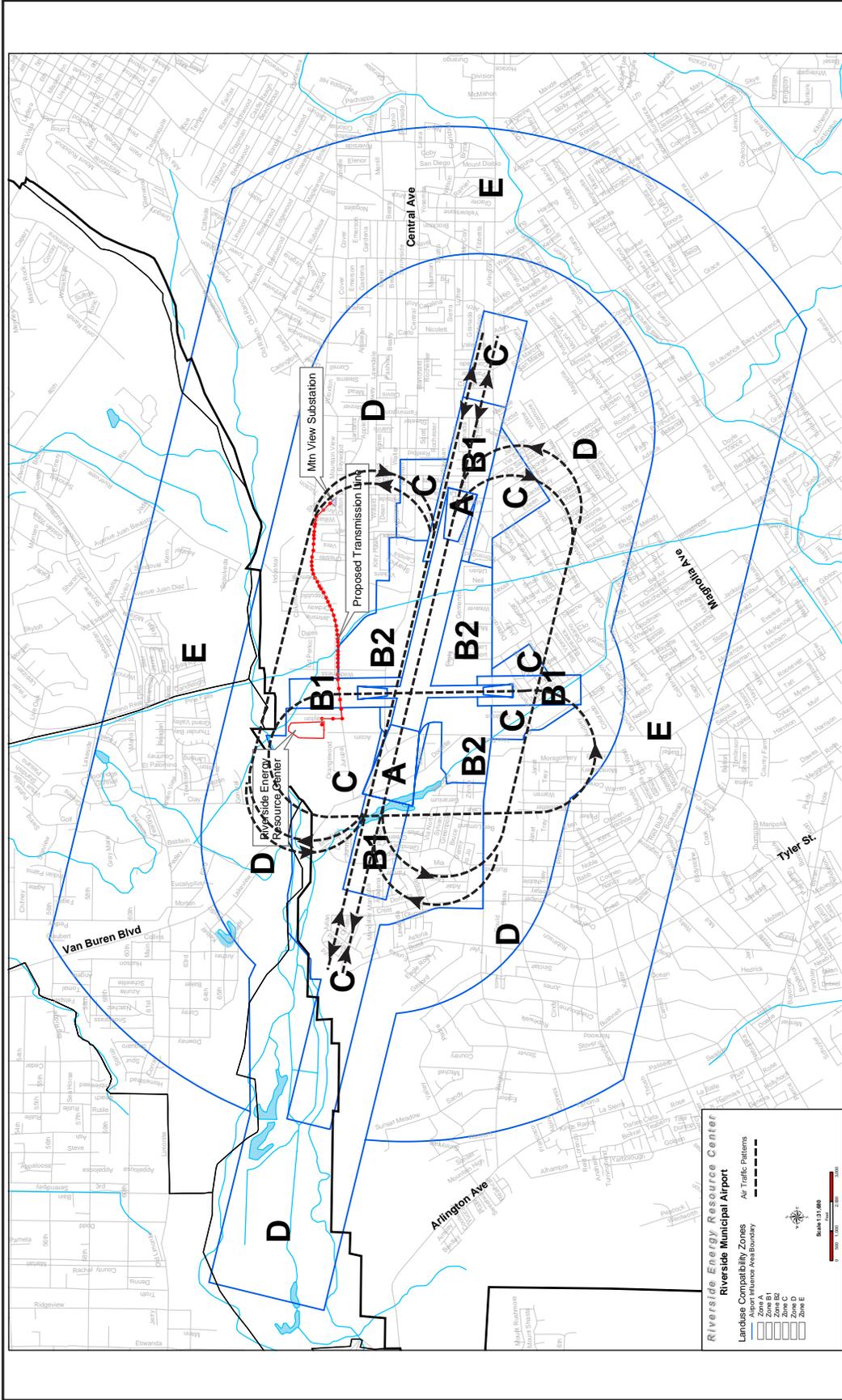


JULY 2004

TRAFFIC AND TRANSPORTATION

TRAFFIC AND TRANSPORTATION - FIGURE 2

U.S. Department of Energy



# TRANSMISSION LINE SAFETY AND NUISANCE

Testimony of Obed Odoemelam, Ph.D.

## INTRODUCTION

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The Riverside Energy Resource Center (RERC) is proposed by the Applicant, Riverside Public Utilities (RPU) for a 12-acre fenced parcel adjacent to the City of Riverside's wastewater treatment plant at the northern end of Acorn Street. According to information from the applicant (RERC 2004a, pp. 1, 31, 32, 43 and 111), the project's power would be delivered to RPU's 69 kV power grid through two 1.7-mile double-circuit, overhead 69 kV transmission lines extending from a new on-site RERC Substation to a connection point on the line presently connecting the Mountain View Substation to the Riverside Substation. As more fully discussed by the Applicant (RERC 2004a, pp. 31, 32, 44 and 45), this connection point (to the east of the project) would be approximately 400 feet to the northwest of the Mountain View Substation. The proposed route would run through a mostly light industrial/manufacturing area as well as a subdivision of single-family residential homes, the nearest of which would be approximately 4,800 feet the east. However, the last 300 feet of the line would be within 40 feet of some of the scattered residential properties in the area (RERC 2004a, p.206). At such distances, any field contribution from the proposed and similar 69 kV lines would be minimal, meaning that the residential exposures at the root of the present health concern would be mostly insignificant.

As more fully discussed by the applicant (RERC 2004a, pp.31 and 43), the proposed project and related transmission lines would be built, owned and operated by RPU. Therefore, the lines would be designed and built according to RPU's design guidelines and construction practices reflecting compliance with applicable safety laws, ordinances, regulations, and standards (LORS), and California Public Utilities Commission's (CPUC) general orders on electric and magnetic field (EMF) reduction. As reflected in the information from the applicant (RERC 2004a, pp. 33 and 34), both the 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 EMF reduction issue. The purpose of this analysis is to assess the proposed line construction and operational plan for incorporation of the measures necessary for such compliance.

Staff's analysis will focus on the following issues, which relate primarily to the physical presence of the 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 (LORS)**

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Staff has identified the following LORS as useful significance criteria to evaluate whether the proposed project will have any significant adverse impact.

### **AVIATION HAZARD**

The physical presence of the proposed lines could pose an aviation hazard to area aviation if the line protrudes high enough into the navigable air space and is located close enough to area airports. The potential for such a hazard is addressed through the following LORS:

- Title 14, Part 77 of the Federal Code of Regulations (CFR), "Objects Affecting the Navigation Space." Provisions of these regulations specify the criteria used by the Federal Aviation Administration (FAA) for determining whether a "Notice of Proposed Construction or Alteration" is required for potential obstruction hazards. The need for such a notice depends on factors related to the height of the structure, the slope of an imaginary surface from the end of nearby runways to the top of the structure, and the length of the runway involved. Such notification allows the FAA to ensure that the structure is located to avoid any significant hazards to area aviation.
- FAA Advisory Circular (AC) No. 70/460-2H, "Proposed Construction and or Alteration of Objects that may Affect the Navigation Space." This circular informs each proponent of a project that could pose an aviation hazard of the need to file the "Notice of Proposed Construction or Alteration" (Form 7640) with the FAA.
- FAA AC No. 70/460-1G, "Obstruction Marking and Lighting." This publication 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.

### **AUDIBLE NOISE AND RADIO INTERFERENCE**

The physical interactions of electric fields from transmission lines could produce audible noise and interfere with radio-frequency communication in the area. Such impacts are prevented or mitigated through compliance with the following regulations and practices:

- Federal Communications Commission (FCC) regulations in Title 47 CFR, Section 15.25.
- General Order 52 (GO-52), California Public Utilities Commission (CPUC). Industry design standards and maintenance practices.

### **FIRE HAZARDS**

Fire hazards from overhead transmission line operation are mostly related to sparks from conductors of overhead lines or direct contact between the line and nearby trees and other combustible objects. Such fires are prevented through compliance with the following regulations:

- General Order 95 (GO-95), CPUC, “Rules for Overhead Electric Line Construction” specifies tree-trimming criteria to minimize the potential for power line-related fires.
- Title 14 Section 1250 of the California Code of Regulations, “Fire Prevention Standards for Electric Utilities” specifies utility-related measures for fire prevention.

## **SHOCK HAZARD**

All transmission and subtransmission line operations pose a risk of hazardous or nuisance shocks to humans. Hazardous shocks are possible from direct or indirect contact between an individual and the energized line. Such shocks are capable of serious physiological harm or death and remain a driving force in the design and operation of transmission and other high-voltage lines. The nuisance shocks by contrast, are caused by current flow at levels generally incapable of causing significant physiological harm. They result most commonly from contact with a charged metallic object in the transmission line environment. The following regulations are intended to prevent such shocks:

- GO-95, CPUC. “Rules for Overhead Line Construction”. These rules specify uniform statewide requirements for overhead line construction regarding ground clearance, grounding, maintenance and inspection. Implementing these requirements ensures the safety of the general public and workers working on or around the line.
- Title 8, CCR, Section 2700 et seq., “High Voltage Electric Safety Orders”. These safety orders establish essential requirements and minimum standards for safely installing, operating, and maintaining electrical installations and equipment.
- National Electrical Safety Code, Part 2: Safety Rules for Overhead Lines. Provisions of this code are intended to minimize the potential for direct or indirect contact with the energized line.
- The National Electrical Safety Code and the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE).

## **IMPACTS**

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Following is the Environmental Checklist that identifies potential impacts in this issue area. Below the checklist is a discussion of each type of impact, and the reasons for staff’s conclusions regarding the potential for significance.

<b>ENVIRONMENTAL CHECKLIST</b>	Potentially Significant Impact	Potentially 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	

## DISCUSSION OF IMPACTS

### A. Aviation Hazard: Less Than Significant Impact

As noted by the applicant (RERC 2004a, pp. 31 and 42), the proposed RERC site is approximately 2,900 feet north of the Riverside Municipal Airport. Since the proposed line support structures would (at a maximum height of 80 feet) be much less than the FAA-specified threshold of 200 feet with respect to aviation hazards, staff does not expect these lines to pose a significant collision hazard to aviation at the Riverside Municipal Airport. While this means that a Notice of Construction or Alteration would not be required, the Applicant has filed this notice with the FAA as is customary for all new transmission lines. The Riverside Airport manager, Airport Land Use Commission and Caltrans have submitted comments which are discussed in the **Traffic and Transportation** section of this Final Initial Study and staff has included their recommendations as Conditions of Exemption.

### B. Radio Frequency Interference: Less Than Significant Impact

As discussed by the applicant (RPU 2004 p. 38), the electric fields from the proposed and similar 69 kV lines are not strong enough to produce the radio noise or television interference that is possible from lines of 345 kV or higher (as noted by EPRI 1982). The applicant has drawn from experience with its existing 69 kV grid lines in concluding that no such noise or television interference would occur in area residences. The applicant, however, intends to mitigate any related complaints whenever they are lodged. Staff recommends a specific Condition of Exemption (**TLSN-2**) to ensure such mitigation.

### C. Fire Hazard: Less Than Significant Impact

The Applicant (RERC 2004a, pp. 35 through 42) intends to comply with the requirements of applicable regulations and standards intended to prevent hazardous or nuisance shocks to humans. Staff's recommended Conditions of Exemption (**TLSN-1** and **TLSN-5**) will ensure such compliance.

### D. Shock Hazard: Less Than Significant Impact

The issue of concern to staff is the likelihood of a fire hazard from operation of the proposed line. The applicant (RPU 2004, pp. 35 through 42) intends to comply with

applicable regulations intended to ensure that the lines are adequately located away from trees and other combustible objects and materials to prevent fires or minimize such fires when they occur. Staff recommends two Conditions of Exemption (**TLSN-1** and **TLSN-4**) to ensure the distancing and fire prevention requirements are met.

#### **E. Electric and Magnetic Field Exposure: Less Than Significant Impact**

Exposure to power-frequency electric and magnetic fields is considered by some researchers to be capable of biological impacts at high intensities. However, as noted by the applicant (RERC 2004a, pp. 35 and 36), power line fields have not been established (at normal environmental levels) as capable of significant biological effects in exposed humans. The CPUC has established specific design requirements for dealing with 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' field reducing design is adequate to maintain possible human exposures within limits reflected in CPUC's requirements on the issue.

The Applicant (RERC 2004a, pp. 37 and 38) estimated the maximum electric field strength as 0.63 kV/m within the right-of-way (ROW), diminishing to 0.14 kV/m at the edge of the ROW. These field strengths are within the range for RPU lines of the same voltage. The maximum magnetic field strength will be approximately 72.7 milliGauss (mG) within the ROW, diminishing to 41.3 mG at the edge of the ROW. These calculated values reflect the effectiveness of the specific magnetic field reduction measures to be implemented when the proposed lines are located alone or in the vicinity of other area lines. These magnetic field strengths are within the range expected for RPU lines of the same voltage and current-carrying capacity and are much lower than the limits established by the relatively few states with regulatory limits. Staff's recommended Conditions of Exemption (**TLSN-1** and **TLSN-3**) will ensure that the line's field strengths will be within the expected levels.

## **CONCLUSIONS**

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Staff has determined that the proposed RERC lines would be designed and operated in compliance with all applicable LORS thus ensuring that the project will have less than a significant impact in the area of TLSN. The following Conditions of Exemption are recommended to ensure implementation of the design and operational measures necessary.

## **PROPOSED CONDITIONS OF EXEMPTION**

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**TLSN-1** The project owner shall construct the transmission lines according to the requirements of CPUC's GO-95, GO-52, applicable sections of Title 8, Section 2700 et seq. of the California Code of Regulations and PG&E's EMF-reduction guidelines arising from CPUC Decision 93-11-013.

**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 compliance with this requirement.

**TLSN-2** The project owner shall ensure that every reasonable effort will be made to identify and correct, on a case-specific basis, any complaints of interference with radio or television signals from operation of the project-related lines and associated switchyards.

The project owner shall maintain written records for a period of five years, of all complaints of radio or television interference attributable to operation together with the corrective action taken in response to each complaint. All complaints shall be recorded to include notations on the corrective action taken. Complaints not leading to a specific action, or for which there was no resolution should be noted and explained. The record shall be signed by the project owner and also the complainant, if possible, to indicate concurrence with the corrective action or agreement, with the justification for a lack of action.

**Verification:** All reports of line-related complaints shall be summarized for the project-related lines and included during the first five years of plant operation in the Annual Compliance Report.

**TLSN-3** The project owner shall engage a qualified consultant to measure the strengths of the lines' electric and magnetic fields from the lines before and after they are energized. Measurements shall be made according to American National Standard Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) standard procedures at representative points along the edge of the right-of-way for which field strength estimates were provided.

**Verification:** The project owner shall file copies of the pre-and post-energization measurements with the CPM within 60 days after completion of the measurements.

**TLSN-4** The project owner shall ensure that the rights-of-way of the project-related lines are kept free of combustible material, as required under the provisions of Section 4292 of the Public Resources Code and Section 1250 of Title 14 of the California Code of Regulations.

**Verification:** During the first five years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the right-of-way and provide such summaries in the Annual Compliance Report.

**TLSN-5** The project owner shall ensure that all permanent metallic objects within the rights-of-way of the project-related lines are grounded according to industry standards.

**Verification:** At least 30 days before the lines are energized, the project owner shall submit a letter confirming compliance with this condition to the CPM.

## REFERENCES

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- 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
- 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.
- RERC (Riverside Energy Resource Center) 2004a. Application for Small Power Plant Exemption. Submitted to the California Energy Commission on April 26, 2004.

# **TRANSMISSION SYSTEM ENGINEERING**

Testimony of Sudath Arachchige, Demy Bucaneg, Jr., PE and Al McCuen

## **SUMMARY OF CONCLUSIONS**

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Staff concludes that the proposed power plant switchyard and interconnection facilities to the Riverside Public Utilities electric system are in accordance with good utility practices and are acceptable in accordance with Laws, Ordinances, Regulations and Standards (LORS). No additional new downstream transmission facilities are required to accommodate interconnection of the Riverside Energy Resource Center (RERC) power plant. No significant impacts on energy resources will occur. The Short Circuit Study reveals that the interconnection of the power plant would have some marginal impacts in the Riverside Public Utilities electric system. The recommended breaker replacement with higher interrupting rating would be effective in eliminating the marginal impacts of the project and would provide adequate system reliability.

## **INTRODUCTION**

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The Transmission System Engineering (TSE) analysis identifies whether the transmission facilities associated with the proposed project would conform to all applicable LORS required for safe and reliable electric power transmission, and assesses whether the applicant has accurately identified all interconnection and downstream facilities required for the addition of the project to the Riverside Public Utilities electric grid.

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" (California Code of Regulations, title 14, §15378). Therefore, the Energy Commission must identify and evaluate the environmental effect of construction and operation of any new or modified transmission facilities required for the project's interconnection to the Riverside Public Utility electric grid and also for any construction or operation of transmission facilities that are required as a result of the power plant's addition to the California transmission system but are beyond the project's interconnection with the existing transmission system. The California Independent System Operator (Cal-ISO) is responsible for ensuring electric system reliability for all participating transmission owning utilities and determines both the standards necessary to achieve reliability and whether the proposed project conforms to those standards.

The Riverside Public Utilities (applicant) filed an application for a Small Power Plant Exemption (SPPE) with the California Energy Commission to construct a nominal 96-megawatt (MW), natural gas-fired, simple cycle combustion turbine generating facility to be located at the northern terminus of Acorn Street in the City of Riverside, Riverside County, California. The applicant proposes to connect their project from the RERC switchyard by intercepting existing 69kV line immediately outside of the Mountain View Substation via a new 69kV double circuit transmission line. The double-circuit 69kV line

will extend approximately 9,000 feet from the intercept point to the RERC facility. Units 1 and 2 of the project are expected to be on line on May, 2005 and July, 2005 respectively (RERC2004a, Sections 1.2.3 and 1.2.6).

## **LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)**

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Staff is charged with evaluating whether the project as proposed has a substantial adverse impact on the environment or energy resources. Staff has identified the following LORS as useful as significance criteria for evaluating whether the project as proposed will have a substantial adverse impact on the environment or energy resources, and provides for reliable electric power transmission.

- 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.
- The North American Electric Reliability Council (NERC) and Western Systems Coordinating Council (WSCC) Planning Standards were merged. The combined Planning Standards are now referred to as the NERC/WSCC Planning Standards and provide the system performance standards used in assessing the reliability of the interconnected system. Certain aspects of the NERC/WSCC standards are either more stringent or more specific than the NERC standards. 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 WSCC system is based to a large degree on Section I.A of the standards, "NERC and WSCC Planning Standards with Table I and WSCC Disturbance-Performance Table" and on Section I.D, "NERC and WSCC 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) and 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 in a 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 2001).

- NERC Planning Standards provide national policies, standards, principles and guidelines to assure the adequacy and security of the electric transmission system. The NERC planning standards provide for system performance levels under normal and contingency conditions. With regard to power flow and stability simulations, while these Planning Standards are similar to WSCC Standards, certain aspects of the WSCC standards are either more stringent or more specific than the NERC standards for Transmission System Contingency Performance. The NERC planning standards apply not only to interconnected system operation but also to individual service areas (NERC 1998).
- Cal-ISO Grid Planning Standards also provide standards, and guidelines to assure the adequacy, security and reliability in the planning of the Cal-ISO transmission grid facilities. The Cal-ISO Grid Planning Standards incorporate the WSCC and NERC Planning Standards. With regard to power flow and stability simulations, these Planning Standards are similar to WSCC and the NERC Planning Standards for Transmission System Contingency Performance. However, the Cal-ISO Standards also provide some additional requirements that are not found in the WSCC or NERC Planning Standards. The Cal-ISO Standards apply to all participating transmission owners interconnecting to the Cal-ISO controlled grid. They also apply when there are any impacts to the Cal-ISO grid due to facilities interconnecting to adjacent controlled grids not operated by the Cal-ISO (Cal-ISO 2002a).

## **EXISTING FACILITIES AND RELATED SYSTEMS**

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The proposed project 12-acre site is owned by the City of Riverside and is located adjacent to the City of Riverside's Wastewater Treatment Plant (WWTP) and cogeneration plant in a light industrial area. The WWTP is located on the south side of the site boundary and has a 3.3 MW cogeneration facility. The cogeneration plant will be the source of power to black start the RERC plant. The two facilities will be cross-tied for the electrical power. Riverside Public Utilities provides water supply and power resources in the service area of Riverside County. The project area is served by the 69kV sub transmission networks of Riverside Public Utilities, which includes Plaza, Acorn, Mt. View, Riverside, Hunter, and Lynn substations. The project is proposed to be interconnected to the Mt. View and Riverside substations. This would enhance reliability and provide an efficient local power resource, especially during peak seasons in the load centers of the Riverside County. Staff believes that the project would provide additional reactive power supply and voltage support in the local network during peak hours.

## **PROJECT DESCRIPTION**

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### **SWITCHYARD AND INTERCONNECTION FACILITIES**

The applicant proposes to construct and operate the RERC as a nominal 96-megawatt (MW), natural gas-fired, simple cycle power plant to be located in the City of Riverside. The RERC would consist of two General Electric (GE) combustion turbine generators (CTG) each with a gross maximum output of approximately 50 MW with a net output of approximately 96 MW. Each generating unit would be connected to a 15kV switchgear bus through a 3000-ampere circuit breaker. The low voltage terminals of each dedicated 42/56/70 MVA, 13.8/69 kV step-up transformer would be connected to a 15kV switchgear bus through a 3000-ampere circuit breaker. The high voltage terminals of each transformer would be connected to the new RERC switchyard by overhead conductors. The initial RERC 69 kV switchyard shall be comprised of two full bays of breaker and-a-half scheme consisting of six breakers, two 69kV line positions and two GSU positions. The switchyard would be constructed, owned and operated by the applicant (RERC2004a, Electrical Key one-line diagram, DWG E1-1-1 &2).

The existing 69kV transmission line connects the Mt. View and Riverside substations, which are both owned and operated by the Riverside Public Utilities. The RERC will be looped into this existing transmission line approximately 400 feet outside Mt. View Substation, establishing two segments: the Mt. View to RERC switchyard and the Riverside Substation to RERC switchyard. From the intercept point, the double-circuit 69kV line will extend approximately 9,000 feet to the RERC facility. The new double-circuit 69-kV line will be comprised of self-supporting galvanized steel and /or wood poles with top-of-pole heights near 80 feet. Conductor selection for the new line is anticipated to be 954 Aluminum conductor steel reinforced (ACSR). The existing line is 653.9 ACSR. The last span into Mt. View from the intercept point will also be upgraded to 954 ACSR as part of this project (RERC2004a, Section 2.12).

The configuration of the switchyard and the new interconnecting transmission line is in accordance with good utility practices and is acceptable to staff.

## **ANALYSIS AND IMPACTS**

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### **SYSTEM RELIABILITY**

A System Impact Study (SIS) for connecting a new power plant to the existing power system grid is performed to identify the interconnection facilities to the grid, downstream transmission system impacts and their mitigation measures in conformance with system performance levels as required in Utility reliability criteria, NERC planning standards, WSCC reliability criteria and Cal-ISO reliability criteria. The study determines both positive and negative impacts, and for the reliability criteria violation cases (for the negative impacts) determines the alternate and preferred additional transmission facilities or other mitigation measures. The study is conducted with and without the new generation project and its interconnection facilities by using the computer model base case for the year the generator project would come on-line. The study normally includes a Load Flow study, Transient Stability study, Post-transient Load Flow study and Short Circuit study. The study is focused on thermal overloads, voltage deviations,

system stability (excessive oscillations in the generators and transmission system, voltage collapse, loss of loads or cascading outages) and short circuit duties. The study must be conducted under the normal condition (N-0) of the system and also for all credible contingency/emergency conditions, which include the loss of a single system element (N-1) such as a transmission line, transformer or a generator and the simultaneous loss of two system elements (N-2), such as two transmission lines or a transmission line and a generator. The study may also be conducted for credible simultaneous loss of multiple (more than two) system elements. In addition to the above analysis, the studies may be performed to verify whether sufficient active or reactive power margins are available in the area system or area sub-system to which the new generator project would be interconnected.

### **Scope of System Impact Study (SIS)**

The SIS was performed by the Riverside Public Utilities and POWER Engineers. The study included a Power Flow Analysis, and a Short Circuit Analysis. The study included Riverside Public Utilities 69kV network under minimum loading conditions of 125 MW. The Power Flow Study was also conducted with and without the RERC under peak load conditions of 530 MW. The 2005 Summer peak base case modeled all generation and approved system upgrades that would be operational by May, 2005. The dynamic stability study was not conducted with the RERC using a 2005 summer base case to determine whether the RERC would create instability in the system following certain selected outages. The short circuit studies were conducted both with and independent of RERC to determine if the RERC would result in overstressing existing Substation facilities. (POWER Engineers, Circuit Breaker Stress Study, September, 2003, RERC2004a, Section 5.1.4.1,5.1.4.2 and Riverside Public Utilities, Power Flow Diagrams).

### **Power Flow Study Results**

The SIS indicates that the addition of the RERC would not have adverse impacts on the transmission facilities during normal conditions for 2005 system conditions studied. However, some marginal impacts were observed following single contingencies and they are listed in the section 5.1.4.1 of the SPPE (RERC 2004a, Section 5.1.4.1).

#### **Normal (n-0) Conditions**

There are no overload criteria violations identified during normal conditions due to the addition of the RERC project under 2005 summer peak condition.

#### **Contingency (n-1/cal-iso category b) Conditions and Mitigation**

The study identified marginal overload criteria violations on the transmission facilities due to the addition of the project following single contingencies (Cal-ISO category B) under the 2005 system conditions studied.

- The Riverside Transmission Line Planning Criteria allows 110 percent loading for loss of a single line. Therefore, the single-contingency loading is acceptable.

## **Short Circuit Study Results and Mitigation**

The Short Circuit Study for Substation evaluation performed by POWER Engineers identified that the addition of the RERC would overstress three breakers at the Mt. View Substation. The segments of the overload transmission lines were Mt. View to Plaza, Mt. View to Freeman and Mt. View to Vista.

**MITIGATION:** The overstressed breakers at Mt. View are being replaced with new SF6 breakers. Staff considers the mitigation measures effective.

## **NEW TRANSMISSION LINE AND SYSTEM MODIFICATIONS**

Besides the interconnection facilities and the new 69 kV transmission line between the RERC switchyard and Mt. View Substation, accommodating the power output of the RERC would not require any other new downstream transmission facilities.

System modification requirements would include the replacement of three 69 kV breakers with higher capacity at each of the Mt. View Substation.

## **CUMULATIVE IMPACTS**

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Depending on loads in the City of Riverside and the amounts of local generation, staff believes that the project should have minimal or no cumulative impacts on the transmission system. The cumulative marginal impacts due to the RERC, as identified in the SIS, will be mitigated. Also, staff believes that there are some positive impacts as voltages are improved and system losses in the local network would decrease.

## **ALTERNATIVE TRANSMISSION ROUTES**

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The applicant did not consider any interconnection alternative other than the proposed interconnections to the Mt. View and Riverside 69kV Substations, since the site is close to the nearest Riverside Public Utility transmission substation and involved the shortest possible interconnection with lower environmental impacts (RERC 2004a, Section 1.4). This is allowed under CEQA and acceptable to staff.

## **COMPLIANCE WITH LORS**

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The new RERC switchyard would be constructed within the fenced property of the City of Riverside at the WWTP site. The terminating facilities and system modifications would be done within the fenced yards of the Mt. View existing substation. The new 69 kV overhead transmission line between the switchyard and the Mt. View Substation would be built by Riverside Public Utilities according to NESC standards and GO-95 Rules, and would have no significant or unmitigated environmental impacts. The facilities would be in accordance with good utility practices and acceptable to staff in accordance with LORS.

## **RESPONSE TO AGENCY AND PUBLIC COMMENTS**

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No agency or public comments related to the TSE discipline have been received.

## **CONCLUSIONS**

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Staff concludes as follows:

1. The System Impact Study complies with the NERC/WECC and, NERC and Cal-ISO planning standards and reliability criteria. After reviewing the Power Flow analysis, staff finds that interconnection of the RERC would not cause any adverse impacts on the transmission facilities under normal conditions of the system. No overload criteria violations were found under single contingencies (Cal-ISO Category B) conditions.
2. The Short Circuit Study for Substation evaluation identified that the addition of the RERC would overstress three breakers at the Mt. View Substation. Riverside Public Utilities has plans to replace the three overloaded breakers at the Mt. View Substation.
3. The recommended relay protection for the project generators and the mitigation measures selected and planned will be effective in eliminating the adverse impacts of the project and ensure system reliability. No significant unmitigated impacts to energy resources will occur.
4. The new plant with a net output capacity of 96 MW would allow the RERC to provide a more efficient and reliable local power resource especially during peak seasons in the load centers of the City of Riverside. Staff believes that the project would also provide additional local reactive power, voltage stability and reduce Riverside Public Utilities system losses in the local network during peak hours.
5. The proposed RERC switchyard and the new interconnecting transmission facilities to the Riverside Public Utilities system are in accordance with good utility practices and are acceptable to staff according to LORS.
6. The proposed power plant will reduce the City's reliance on volatile power purchases, relieve the power loadings on the Southern California Edison (SCE) Vista Substation and increase the City's ability to serve its customers reliably. The generation will also provide a source of emergency power in the event of a power grid blackout.
7. The project, if approved would not cause a significant adverse impact on the electric system.

## **COMMENTS FROM THE PUBLIC OR AGENCIES**

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None

## **CONDITIONS OF EXEMPTION**

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None

## REFERENCES

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- Cal-ISO (California Independent System Operator) 1998a. Cal-ISO Tariff Scheduling Protocol posted April 1998, Amendments 1,4,5,6, and 7 incorporated.
- Cal-ISO (California Independent System Operator) 1998b. Cal-ISO Dispatch Protocol posted April 1998.
- Cal-ISO (California Independent System Operator) 2002a. Cal-ISO Grid Planning Standards, February 7, 2002.
- RERC2004a: Application for Small Power Plant Exemption for the Riverside Energy Resource Center. Submitted to CEC on 04/29/04.
- RERC2004a1- POWER Engineers, Short Circuit Study submitted to CEC, May 04.2004
- RERC2004c-Riverside Public Utilities, Responses to Data Request, June 8, 2004.
- NERC (North American Electric Reliability Council) 1998. NERC Planning Standards, September 1997.
- WSCC (Western Systems Coordinating Council) 2001. NERC/WSCC Planning Standards, June 2001.

## DEFINITION OF TERMS

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### 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 Mark R. Hamblin

## INTRODUCTION

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Visual resources are the natural and man-made features of the environment that can be viewed. This analysis focuses on whether construction and operation of the Riverside Energy Resource Center (RERC) project would cause visual impacts. The determination of the potential for visual impacts resulting from the proposed project is required by the California Environmental Quality Act.

## ORGANIZATION OF ANALYSIS

This analysis is organized as follows:

- description of analysis methodology;
- description of applicable laws, ordinances, regulations, and standards (LORS);
- description of the project aspects that may have the potential for significant visual impacts;
- assessment of the visual setting of the proposed power plant site and linear facility routes;
- evaluation of the visual impacts of the proposed project on the existing setting;
- identification of measures needed to mitigate any potential significant adverse impacts of the proposed project; and
- conclusions and recommendations.

## ANALYSIS METHODOLOGY

Visual resources analysis has an inherently subjective aspect. However, the use of generally accepted criteria for determining impact significance and a clearly described analytical approach aid in developing an analysis that can be readily understood.

### Significance Criteria

Energy Commission staff considered the following criteria in determining whether a visual impact would be significant.

#### **State**

The CEQA Guidelines define a “significant effect” on the environment to mean a “substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including...objects of historic or aesthetic significance” (California Code of Regulations, Title 14, Section 15382).

Appendix G of the CEQA Guidelines, under Aesthetics, lists the following four questions to be addressed regarding whether the potential impacts of a project are significant.

1. Would the project have a substantial adverse effect on a scenic vista?
2. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
3. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
4. Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

### **Impact Duration**

The visual analysis typically distinguishes three different impact durations. **Temporary impacts** typically last no longer than two years. **Short-term impacts** generally last no longer than five years. **Long-term impacts** are impacts with a duration greater than five years.

### **View Areas and Key Observation Points**

The proposed project would be visible from several areas surrounding the project site. Energy Commission staff evaluated the visual impact of the project from each of these areas. Staff uses Key Observation Points<sup>1</sup>, or KOPs, as representative locations from which to conduct detailed analyses of the proposed project and to obtain existing condition photographs and prepare visual simulations. KOPs are selected to be representative of the most critical locations from which the project would be seen. However, KOPs are not the only locations that staff considered in each view area. Prior to the filing of the Application for a Small Power Plant Exemption (SPPE), staff visited the project area with consultants to the City of Riverside (applicant) for the purpose of selecting the KOPs. Staff believes that the KOPs presented in the SPPE application are appropriate for this analysis.

### **Visual Quality**

Visual quality is an expression of the visual impression or appeal of a given landscape and the associated public value attributed to the visual resource. This analysis used an approach that considers visual quality as ranging from outstanding to low (see **Visual Resources Table 1**). Outstanding visual quality is a rating reserved for landscapes that would be what a viewer might think of as "picture postcard" landscapes. Low visual quality describes landscapes that are often dominated by visually discordant human alterations, and do not provide views that people would find inviting or interesting (Buhyoff et al., 1994).

### **Viewer Concern/Expectation**

Viewer concern is a measurement of the level of viewer interest regarding the visual resources in an area. Viewer expectation is the character and quality of a view that

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<sup>1</sup> The use of KOPs or similar view locations is common in visual resource analysis. The U.S. Bureau of Land Management (USDI BLM 1986a, 1986b, 1984) and the U.S. Forest Service (USDA Forest Service 1995) use such an approach.

viewers expect. One basis for that expectation by individual members of the public is their personal familiarity with the resource. Official statements of public values and goals, such as formal designation of an area or travel corridor as scenic, typically formalize the widely recognized visual value of that resource, and the public's desire to protect that value. Where such official statements exist, the general public expectation is that the visual quality and character of that resource will be preserved. Such official statements also create similar expectations in members of the public who were not previously aware of the value of the resource.

This analysis also employed land use as an indicator of viewer concern. Uses associated with 1) designated parks, monuments, and wilderness areas, 2) scenic highways and corridors, 3) recreational areas, and 4) residential areas are generally considered to have high viewer concern. However, existing discordant elements in the landscape may temper viewer concern. Travelers on other highways and roads, including those in agricultural areas, are generally considered to have moderate viewer concern, but viewer expectation and the level of concern may be lower if the existing landscape contains substantial discordant elements. However, in some situations an area of lower visual quality and degraded visual character contains particular views or visual features that are of substantially higher visual quality or interest to the public. Viewers may have a high degree of concern about potential degradation of the visual quality and character of that view or feature. Commercial uses, including business parks, typically have low-to-moderate viewer concern, though some commercial developments have specific requirements related to visual quality, with respect to landscaping, building height limitations, building design, and prohibition of above-ground utility lines, which indicate a higher level of viewer concern. Industrial uses typically have the lowest viewer concern because workers are focused on their work, and generally are working in surroundings with relatively low visual value.

**Visual Resources Table 1  
Landscape Visual Quality Ratings**

<b>Visual Quality Rating</b>	<b>Description</b>
Outstanding	A rating reserved for landscapes with exceptionally high visual quality. These landscapes will be significant regionally and/or nationally. They usually contain exceptional natural or cultural features that contribute to this rating. They will be what we think of as “picture post card” landscapes. People will be attracted to these landscapes to be able to view them.
High	Landscapes that have high-quality scenic value. This may be due to cultural or natural features contained in the landscape or to the arrangement of spaces contained in the landscape that causes the landscape to be visually interesting or a particularly comfortable place for people. These are often landscapes that have high potential for recreational activities or in which the visual experience is important.
Moderately High	Landscapes that have above average scenic value but are not of high scenic value. The scenic value of these landscapes may be due to man-made or natural features contained in the landscape, to the arrangement of spaces in the landscape, or to the two-dimensional attributes of the landscape.
Moderate	Landscapes that have average scenic value. They usually lack significant man-made or natural features. Their scenic value is primarily a result of the arrangement of spaces contained in the landscape and the two-dimensional visual attributes of the landscape.
Moderately Low	Landscapes that have below average scenic value but not low scenic value. They may contain visually discordant man-made alterations, but the landscape is not dominated by these features. They often lack spaces that people will perceive as inviting and provide little interest in terms of two-dimensional visual attributes of the landscape.
Low	Landscapes with low scenic value. The landscape is often dominated by visually discordant man-made alterations; or they are landscapes that do not include places that people will find inviting and lack interest in terms of two-dimensional visual attributes.

Rating scale based on Buhyoff et al., 1994

**Viewer Exposure**

The visibility of a landscape feature, the number of viewers, and the duration of the view all affect the exposure of viewers to a given landscape feature. Visibility is highly dependent on screening, viewing distance to the landscape feature, and angle of view. The smaller the degree of screening and/or the closer the feature is to the center of the view area, the greater its visibility. Increasing distance reduces visibility. Viewer

exposure can range from low values for all factors, such as a partially obscured and brief background view for a few motorists, to high values for all factors, such as an unobstructed foreground view from a large number of residences.

### **Visual Sensitivity**

The overall level of sensitivity of a view area to impacts due to visual change is a function of visual quality, viewer concern, and viewer exposure and can range from low to high.

### **Types of Visual Change**

To assess the visual changes that the project would cause, staff considered the following factors.

#### **Contrast**

Visual contrast describes the degree to which a project's visual characteristics or elements (consisting of form, line, color, and texture) differ from the same visual elements established in the existing landscape. The degree of contrast can range from low to high. The presence of forms, lines, colors, and textures in the landscape similar to those of a proposed project indicates a landscape more capable of accepting those project characteristics than a landscape where those elements are absent. This ability to accept alteration is often referred to as visual absorption capability and typically is inversely proportional to visual contrast. Texture is usually an important factor only from foreground distances from which it can be discerned.

#### **Dominance**

Another measure of visual change is project dominance. Dominance is a measure of a) the proportion of the total field of view that the feature occupies; 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 that focuses the view on the feature. A feature's level of dominance is higher if it is near the center of the view, is elevated relative to the viewer, or is backdropped by sky. As the distance between a viewer and a feature increases, its apparent size decreases and thus its dominance decreases. The level of dominance can range from low to high.

#### **View Disruption**

View disruption describes the extent to which any previously visible landscape features are blocked from view or the continuity of the view is interrupted. View disruption of higher quality landscape features by lower quality project features causes adverse visual impacts. The degree of view disruption can range from none to high.

### **Evaluation Process**

For the Visual Resources analysis, staff first examined the planning documents, such as General Plans and Specific Plans, applicable to the project area to gain insight as to the type of land uses intended for the area, and the guidelines given for the protection or preservation of visual resources. Staff then considered the existing visual setting within the project viewshed, which is defined as the geographical area in which the project can

be seen. Staff estimated the visual changes that the project would cause to determine impact significance, following the four CEQA Guidelines checklist questions listed above. Please refer to **Appendix VR-1** at the end of this section of the Final Initial Study for a more complete description of staff's Visual Resources evaluation process.

Before beginning the analysis, staff first determined which parts of the project could create an impact to visual resources. In this case, both the power plant and the visible water vapor plumes it would produce could create an impact to visual resources. Staff examined potential impacts using a Key Observation Point (KOP) analysis, among other tools and information sources. Existing condition photographs, and visual simulations of those same views after project development, were prepared for each KOP. KOPs were selected to be representative of the most sensitive locations from which the project would be seen, but they are not the only locations that staff considered in each view area.

Before the City of Riverside ("applicant") filed its application for a Small Power Plant Exemption (SPPE), staff visited the project area with the applicant's visual consultant for the purpose of selecting the KOPs. At that time, three separate KOPs were chosen for analysis and were included in the RERC application. One KOP represents a viewpoint of the project site, and two KOPs represent views along the planned transmission line route.

Once all potential impacts are examined, staff determines whether any impacts reach a significant level and thus require mitigation beyond that proposed by the applicant. Any required mitigation must be specific to an identified impact and must be feasible.

## **LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

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Staff has identified the following LORS as part of significance criteria to be evaluated as to whether the proposed project will have a substantial adverse affect on visual resources.

### **FEDERAL**

The proposed project is not located on federally administered public lands and therefore is not subject to federal regulations pertaining to visual resources.

### **STATE**

There are no State Scenic Highways within the project viewshed. Therefore, no state regulations pertaining to scenic resources are applicable to the project.

### **LOCAL**

The proposed power plant and associated linear facilities (e.g., recycled water and natural gas supply pipelines, sanitary sewer pipeline, and storm water outfall, etc.) would be located within the city limits of the City of Riverside. Therefore, the project would be subject to local LORS pertaining to the protection and maintenance of visual resources, which are found in the City of Riverside's General Plan and Municipal Code.

## **County of Riverside General Plan**

The County of Riverside's Jurupa Area Land Use Plan designates land in the unincorporated area along the Santa Ana Regional Parkway bordering to the north of the generation site as Light Industrial. This designation allows for a wide variety of industrial and related uses, including assembly and light manufacturing, repair and other service facilities, warehousing, distribution centers, and supporting retail uses.

## **City of Riverside General Plan**

Section IX - Plan Implementation of the General Plan describes and recommends many tools and techniques available to the City of Riverside to implement the goals and policies of the General Plan.

## **City of Riverside Municipal Code (Title 19)**

The City's municipal code sections listed below are relevant to the visual resources analysis of the RERC project.

### **Chapter 19.46 Manufacturing Parking (MP) Zone**

#### ***Section 19.46.010 Generally.***

Manufacturing park zones are intended as restricted industrial districts for manufacturing, assembling, fabricating, warehousing, wholesale distribution uses, administrative or executive offices of business or industrial concerns, scientific research offices and laboratories and certain uses appurtenant to and compatible with restricted industrial development. The requirements and standards contained in this chapter are intended to encourage the establishment of industries which are compatible with one another; to minimize traffic congestion, noise, glare, air pollution, water pollution, and fire and safety hazards; to prohibit industrial uses which, because of potential emanation of dust, ash, smoke, noise, fumes, gas, odors or vibrations, are or may be inconsistent with the intent and purposes of this Chapter; and to establish standards for environmental development including landscaping and requirement of open areas that will tend to result in healthful and productive working conditions. Except as specifically provided elsewhere in this Title, every new use and every new building and premises or land in an MP zone shall be used for or occupied and every building shall be erected, constructed, established, owned, enlarged, maintained, moved into or within such MP zone exclusively and only in accordance with the regulations set out in this Chapter. (Ord. 6565 § 3, 2001; Ord. 4187 § 3 (part), 1975)

#### ***Section 19.46.030 Building height limit.***

The building height limit in an MP zone shall be forty-five feet to the top of the roof structure, except as otherwise provided in Sections 19.68.030 and 19.64.050. (Ord. 6565 § 3, 2001; Ord. 4187 § 3 (part), 1975)

#### ***Section 19.46.110 Lights.***

Lighting, including spotlights, floodlights, electrical reflectors and other means of illumination for signs, structures, landscaping, parking areas, loading areas and the like, shall be focused, directed and so arranged as to prevent glare or direct illumination on streets or adjoining property. (Ord. 6565 § 3, 2001; Ord. 4187 § 3 (part), 1974)

***Section 19.46.120 Standards of performance.***

All businesses in the MP Zone shall continually comply with the following standards:

2. Smoke. Smoke shall not be emitted from any source in a greater density of gray than that described as No. 1 on the Ringlemann Chart, except that visible gray smoke of a shade not darker than that described as No. 2 of the Ringlemann Chart may be emitted for not more than four minutes in any thirty minutes. These provisions applicable to a visible gray smoke shall also apply to visible smoke of a different color but with an equivalent apparent opacity.

7. Glare and Heat. Glare and heat from any source shall not be produced beyond the lot lines of the use.

**Chapter 19.48 Light Manufacturing (M-1) Zone**

***Section 19.48.010 Generally.***

Light manufacturing zones are intended as industrial districts for light manufacturing. Except as specifically provided elsewhere in this title, any and every new use and any and every new building and premises or land in an M-1 zone shall be used for or occupied and every building shall be erected, constructed, established, altered, enlarged, maintained, moved into or within such M-1 zone exclusively and only in accordance with the regulations set out in this chapter. (Prior code § 36.125)

***Section 19.48.025 Design review.***

No new building, structure or sign or exterior alteration or enlargement of an existing building, structure or sign shall be commenced in the M-1 zone until design review approval has been granted pursuant to Chapter 19.62. (Ord. 4571 § 7, 1978)

**Chapter 19.54 Railway (RWY) Zone**

***Section 19.54.010 Generally.***

Railway zones are intended for railway and transportation uses. Except as specifically provided elsewhere in this title, any and every new use and any and every new building and premises or land in RWY zone shall be used for or occupied and every building shall be erected, constructed, established, altered, enlarged, maintained, moved into or within such RWY zone exclusively and only in accordance with the regulations set out in this chapter. (Prior code § 36.140)

***Section 19.54.030 Building height limit.***

The building height limit in a railway zone shall be thirty-five feet, except as otherwise provided in Section 19.68.030. (Prior code § 36.142)

## SETTING

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### EXISTING LANDSCAPE

#### Project Site

The proposed RERC site is to be located within the boundaries of the City of Riverside's Waste Water Treatment Plant. The RERC is to be constructed on 8 acres of a 12 acre site inside what resembles a depression (bowl) surrounded on three sides by an earthen berm (**Visual Resources Figure 1 – Aerial View of Site**). The top of the north berm is approximately 45 feet-tall. Of the 12 acres, 4 acres within the bowl is to be used for equipment storage and construction parking. The site currently contains several large boulders, small amounts of concrete and other debris. The nearest RERC structures will be located approximately 900 feet from the toe of the north berm.

RERC power plant structures would be adjacent to other industrial type structures on the treatment plant: 3.3 MW cogeneration facility; primary; secondary; and tertiary treatment facilities; aeration ponds; sludge digesters; a sewage pump station; and various other associated operations.

#### Surrounding Uses

The site is surrounded by a mix of uses. The City's waste water treatment plant with its various operations is to the west.

A portion of the Santa Ana Regional Parkway known as the Santa Ana River Wildlife Area is located on the north side of the waste water treatment facility and the RERC site. This portion of the parkway provides equestrian trails, hiking, interpretive trails, and serves as a wildlife preserve. There is frequent equestrian usage. At least  $\frac{3}{4}$  of the wildlife area lies west of the Van Buren Boulevard Bridge, west of the waste water treatment plant. The Santa Ana River is within the parkway and located at a base elevation below that of the RERC site.

On the north side of Santa Ana Regional Parkway is a prominent large industrial building. The building has an elevated view of the waste water treatment facility and the RERC site. This building is in the unincorporated community of Pedley. North of the industrial building is a 10-15 foot tall solid masonry wall which spans the regional parkway. The wall provides a visual block and sound buffer for an active railroad track located between the regional parkway and residential subdivisions in Pedley. The masonry wall also blocks views of the RERC from the residential subdivisions. Further in the distance to the north are brown hills and the silhouette line of mountains.

To the east of the project site is an approximate four-acre area used for vehicle storage/parking, a two acre vacant, undeveloped and unimproved area, and an approximate four acre area used for the outdoor storage of industrial garbage and recycle bins for waste management. The bins are spread around the property and piled up towards the rear of it. Further to the southeast is a commercial business park.

To the south of the RERC site is an approximate eight acre area that contains seven-to-nine commercial/industrial buildings. The two largest buildings on this acreage are a Macco body repair and auto painting facility and a fruit packing warehouse. The Macco building is approximately 16,500 square feet and 30 feet in height. The fruit packing building is approximately 24,150 square feet and also has a height of at least 30 feet. Payton Avenue provides public road frontage for both facilities. Other uses within the eight acre area include a wood pallet manufacturer, an income tax preparer, and a dog and cat grooming facility.

Jurupa Avenue is a four-lane major arterial running on an east/west alignment. Payton Avenue, which junctions with Jurupa Avenue, runs along the east side of the project site. The RERC's main entrance is to occur on Payton Avenue. Acorn Avenue provides the main public road access to the Riverside Waste Water Treatment Plant.

The Riverside Municipal Airport is located approximately ½-mile south of the project site. Residential areas are located within a one mile radius of the proposed generation facility.

#### Transmission Route

The proposed RERC transmission route would interconnect with the existing Mountain View substation located approximately 1.70 miles east of the RERC site. The transmission route requires the installation of new poles that would replace existing 50-80-foot poles on the east side of Payton Avenue and the south side of Jurupa Avenue. The new transmission line requires the installation of new 80-foot wood or galvanized steel self-supporting poles.

The transmission line would run along the east side of Payton Avenue and borders an undeveloped and unimproved area, and an approximate four acre area used for the outdoor storage of industrial garbage and recycle bins.

The transmission line route would then cross Jurupa Avenue and run along the south side of Jurupa Avenue to the east. The route borders existing commercial, manufacturing and residential areas.

The proposed route would travel along the east side of Sheppard Street next to a railroad corridor containing three railroad tracks. There are several single family residences along the west side of Sheppard Street with front yards facing the railroad tracks.

#### Linear Route

An approximate 140-foot underground pipeline is to be constructed to deliver natural gas to the project. The proposed pipeline route would extend from an existing Sempra pipeline that crosses the Santa Ana Regional Parkway near the northeast corner of the RERC site; near the site's north berm where a gas metering station already exists. The natural gas pipeline route would travel west from the Sempra pipeline across grassy undulating and sloping terrain (undeveloped bank area) from the Sempra pipeline to a proposed gas metering station to be constructed on the inside toe of the earthen north berm on the project site.

The project will use reclaimed water from the City of Riverside's Waste Water Treatment Plant. Reclaimed water will be supplied by a pipeline from the adjoining treatment plant directly to the proposed plant site. The proposed connection points for the potable water and fire water supply are in Acorn Avenue approximately 60 feet from the southwest corner of the RERC site.

## **VIEWING AREAS AND KEY OBSERVATION POINTS**

**Visual Resources Figure 2** shows the areas from which the project would be visible (project viewshed), and the location and view direction of the three key observation points (KOPs) selected to represent three sensitive viewing areas that would be most impacted by the proposed project (all of the visual resources figures are presented at the end of this analysis). The selected KOPs include the following:

- KOP 1 – view near the intersection of the Jurupa Avenue and Payton Avenue, looking towards the project site;
- KOP 2 – view looking east on Jurupa Avenue between Chester Street and Florence Street; and
- KOP 3 – view looking south southeast, directly east of the Jurupa Avenue, Sheppard Road intersection.

### **KOP 1 – Jurupa Avenue near Payton Avenue**

KOP 1 is a view looking north-northwest toward the site, approximately 275 feet east of the intersection of Jurupa Avenue and Payton Avenue. The KOP represents a view that an individual may see while traveling on Jurupa Avenue (**Visual Resources Figure 3**). There are no residences along Payton Avenue or this portion of Jurupa Avenue. The proposed main power plant entrance is to be off of Payton Avenue.

From KOP 1, a prominent feature in the existing landscape is a relatively flat, currently undeveloped and unimproved property (grass field) being used by a waste management company for the outdoor storage of industrial garbage and recycle bins, east of the project site. The grass field fronts approximately 300 feet of Jurupa Avenue. The property totals about 4 acres. A partial view of a tree-lined, landscaped parking area is shown to the east of the property.

Another prominent feature visible in the middle ground of the KOP 1 is a Macco building and its 30-foot-tall pole/sign, and an 80-foot wooden transmission line pole. The Macco building is approximately 16,500 square feet and 30 feet in height. The Macco building borders the south of the RERC site. An eight acre commercial industrial area lies between Jurupa Avenue and the RERC site (not seen in Figure 3).

Beyond the middle ground, approximately 800 feet to the north of the grass field, a four acre vehicle storage parking area is visible.

The RERC site begins approximately 500-600 feet north of Jurupa Avenue. RERC unit 1 would be located approximately 1,000 feet north of Jurupa Avenue. To the west of the RERC site is the waste water treatment plant (not in the view for KOP 1). Beyond the middle ground of the view is a large industrial building.

There are essentially no notable scenic qualities because the view is dominated by a field that is seasonally covered in grass that has garbage and recycle bins and industrial buildings with low visual quality. The present visual quality of this view from KOP 1 is moderately low.

Residential viewers are typically considered to be highly sensitive to visual changes. However, there are no residences within the KOP view of the project site. The area is dominated by commercial/industrial uses. The project site or Jurupa Avenue are not within a scenic area or travel corridor. Viewer concern is rated low at KOP 1.

Although there are no residences at KOP 1, the RERC site is potentially visible to travelers along Jurupa Avenue. The posted speed limit along Jurupa Avenue near Payton Avenue is 45 mph. SPPE Figure 6.9-5 Existing Traffic Volumes – PM Peak Hour, estimates 670 vehicles traveling west on Jurupa Avenue during the weekday afternoon peak period. An individual looking at a 50-to-80 degree angle (westbound) would have a very brief unobstructed view (6 seconds or less) toward the proposed RERC. The RERC would present a moderately low level of viewer exposure in the context of an already developed industrial setting.

For KOP 1 the moderately low visual quality, the low viewer concern, and the moderately low viewer exposure result in an overall visual sensitivity rating of moderately low.

#### **KOP 2 – Jurupa Avenue between Chester and Florence Street**

KOP 2 represents a view along Jurupa Avenue looking east between Chester and Florence Streets (**Visual Resources Figure 4**). The KOP is a view looking southeast from the north side of Jurupa Avenue. This KOP was selected to represent the view for travelers on Jurupa Avenue and for individuals living in single family residences along Jurupa Avenue and the residential area south of Jurupa Avenue approximately one mile east of the project site.

From KOP 2, the most prominent feature in the existing landscape is the various size evergreen and deciduous trees (some 30-foot-tall or more). A uniform 15-foot (approx.) tall hedgerow borders the rear property line of single family residences along the south side of Jurupa Avenue. The roofs of the houses are visible. Other residences with large mature deciduous trees are visible in the background. Landscaping planted at the various residences along the transmission route provides aesthetically pleasing and some screening aspects of the views that can be experienced along the route. A line of 50-foot-tall wood transmission poles and lines along the south side of the street is visible.

The north side of Jurupa Avenue from this KOP (not shown in Figure 4) has a construction contractor's storage yard. The newer commercial/industrial buildings along the street have reasonably attractive landscaping. Older commercial/industrial buildings have little or no landscaping or screening. The visual quality at this KOP is moderate.

Residential development is dense along the south side of the street. Residential viewers are typically considered to be highly sensitive to visual changes; however residents are also aware that they live adjacent to a commercial/industrial area. Many residences

have large screening vegetation on their properties near the street, presumably to block or limit visibility of the street which would include views of the existing 50-foot wood pole transmission line. Viewers in the backyards from several residences south of Jurupa Avenue would have an unobstructed view of the upper portions of the new 80-foot transmission pole line. The introduction of the new taller pole line would be perceived by residents at this viewing area to be an adverse visual change. Viewer concern is rated moderately high at KOP 2.

Viewer exposure varies within this view area. Because many of the viewers at KOP 2 are people who reside in the area and could potentially view the transmission line route throughout the day, view duration is considered high. Overall, viewer exposure is rated moderately high at KOP 2.

For residents at KOP 2, the moderate visual quality, moderately high viewer concern, and moderately high viewer exposure result in an overall visual sensitivity rating of moderately high.

### **KOP 3 – Sheppard Street near Jurupa Avenue**

KOP 3 represents a view along Sheppard Street looking southwest from Jurupa Avenue toward the Mountain View substation (visible in the background). This KOP was chosen to represent the view by individuals who live in the single family residences that have frontage on Sheppard Street (**Visual Resources Figure 5**).

From KOP 3, prominent features include a railroad corridor (three railroad tracks), Sheppard Street, a couple of transmission pole lines, street lights, residences, mature deciduous trees that are visible in the middle ground and background. The trees vary in size up to 60 feet tall. Eighty-foot tall transmission poles are visible in the background. Also, the metal framework of the Mountain View substation is partially visible in the background.

Eight single family residences face Sheppard Street and the railroad corridor. Many residences have landscaping in their front yards which provides some aesthetically pleasing aspects but offers very little or no screening of the street or the railroad tracks. Elevated railroad tracks, freight train use, wood transmission line poles, a First Methodist Church and its parking area, a cinderblock wall painted with graffiti, and dilapidated wood coops provide visual disruption to the residential view and character of the area. The visual quality of the view from KOP 3 is moderately low.

Viewer concern is rated moderate at KOP 3 because residents are aware their views to the east are dominated by active railroad uses.

Visibility along Sheppard Street is high for a relatively low number of residences. However, due to noise level discomfort and low quality view caused by railroad activity, a resident's duration of view is moderate. Therefore, overall viewer exposure is rated moderate at KOP 3.

For residents at KOP 3, the moderately low visual quality, moderate viewer concern, and moderate viewer exposure result in an overall visual sensitivity rating of moderate.

## 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

<b>VISUAL RESOURCES</b>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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	

### DISCUSSION OF IMPACTS

The following discussion explains the responses to the questions in the environmental checklist.

#### **A. Scenic Vistas: No Impact**

The RERC would be located entirely within the City of Riverside. The RERC's transmission line route does not enter the Santa Ana Regional Parkway. The City of Riverside General Plan 2010 adopted September 13, 1994, does not identify any scenic vistas within the project view shed or the transmission line route. The project would not generate an impact under this criterion.

#### **B. Scenic Resources: Less Than Significant Impact**

Neither the RERC site nor the associated transmission line route contains a scenic resource. The RERC's transmission line route does not enter the Santa Ana Regional Parkway.

The trails/roads within the Santa Ana Regional Parkway are used for fire and emergency service access, maintenance, flood control, and for hiking and equestrian use. Dirt trails and roads within the riverbed are not open to vehicles from the public. There is frequent equestrian usage within the regional parkway. The Riverside County Parks Department does not have information on the number of trail users. Staff was told by the County parks department after winter rains or flooding the riverbed changes and so do the trails/roads. The only trail that does not change is the County Class I bicycle trail along the south side of the riverbed. The Class I bicycle trail follows the route of the Juan Bautista de Anza National Historic Trail. Individuals using the bicycle trail would not have a view of the RERC, because the trail travels along the toe of the berm within the regional parkway.

The project would not be visible from a majority of the equestrian, hiking, biking and interpretive trails within the Santa Ana Regional Parkway. The only portion of the RERC potentially visible is the top 20-30 feet of the exhaust stacks. The proposed project would not block views of any identified or observed important scenic resource. The project would generate a less than significant impact under this criterion.

### **C. Visual Character or Quality: Less Than Significant Impact**

Project aspects that were evaluated in the assessment of Item C include project construction, the power plant structures, the electric transmission line, natural gas and water supply pipelines, and combustion exhaust and cooling tower plumes.

A detailed analysis of operation impacts was conducted for the view areas represented by the three key observation points (KOP). For each KOP, an evaluation of visual contrast, project dominance, and view disruption is presented with a concluding assessment of the overall degree of visual change caused by the proposed project. The results of the operation impact analysis are discussed below by KOP. The visual impacts of night lighting and visible plumes are discussed in separate sections of this analysis.

### **Construction Impacts**

The proposed power plant would occupy 8 acres within a 12-acre site that resembles an earthen bowl. An additional four acres within the bowl is to be used during construction for storage of equipment and materials and, for parking by construction personnel (laydown/staging area). Construction of the proposed power plant may cause temporary visual impacts due to the presence of equipment, materials, and workforce. Construction would involve the use of cranes, and other heavy construction equipment, temporary storage and office facilities in the temporary laydown/staging area. Because of the limited visibility of the site and the short term and changing nature of construction activities, the construction of the power plant would generate a less than significant visual effect.

Nighttime construction is not expected to take place. In the unlikely event that nighttime construction does occur, the applicant would take measures to minimize the off-site visibility of this lighting. These measures would include using the minimal lighting required for operations and safety, and using lighting that is shielded and highly

directional. The mitigation measures proposed by the applicant would ensure that construction lighting impacts, if they occur, are kept to less than significant levels.

After installation of the linear facilities, the areas disturbed by construction activities would be returned to their pre-construction condition, thereby minimizing the impact on the landscape. Construction of the project is expected to last nine months. Due to the temporary nature of project construction activities and the moderately low overall visual sensitivity of the viewshed, no substantial visual degradation of the site or its surroundings would occur.

### **Power Plant Structures**

Prominent power plant buildings and structures would include an approximate 15,000 square-foot administration/control building, a 10,000 square-foot warehouse, two 80-foot-tall exhaust stacks, two 43-foot-tall combustion turbine generators, a 42-foot-tall chiller/cooling tower package, a 52-foot-tall deadend transmission structure and an 80-foot-tall transmission pole line. The entire RERC perimeter is to be fenced with a combination of chain-link fencing and architectural block walls.

### **KOP 1 – Jurupa Avenue near Payton Avenue**

**Visual Resources Figure 3** presents a visual simulation of the proposed project as viewed from KOP 1. RERC unit 1 would be constructed approximately 1,000 feet north of Jurupa Avenue, about 300 feet behind the Macco facility. The photo-simulation represents the view of travelers on Jurupa Avenue, in the foreground, looking toward the project site. Also in the foreground is a flat undeveloped and unimproved four-acre (approx.) grass field that is being used by a waste management entity to stockpile industrial garbage and recycle bins. The bins are being stored near the rear of the property. The four-acre grass field and other undeveloped and unimproved grass land behind the field absorb the majority of the KOP view. A partial view of a tree lined parking lot is to the east of the field.

The simple geometric forms and straight lines of the project structures would be similar to the forms and lines of the industrial type structures west and south of the RERC site (not shown in Figure 3). Though the vertical elements of the RERC (exhaust stacks, deadend and transmission poles) would somewhat contrast with the horizontal elements of the view, vertical man-made features have been established in the landscape, such as the Macco single pole sign and existing wood transmission poles.

The proposed plant's medium gray color as depicted in the simulation would have a moderately low contrast with the seasonally changing colors of the neighboring undeveloped and unimproved grass land (green to brown) and the dark blue and light gray colored Macco building. Where visible to viewers, the RERC would present an overall visual contrast of moderately low.

The project would visibly occupy a small portion of the panoramic landscape visible from KOP 1. Power plant structures would appear comparable in size to the Macco building on Payton Avenue. The majority of the power plant structures would not extend above the silhouette of the hills in the background. The exhaust stacks and transmission

poles would be seen against the sky at this angle, thereby increasing the conspicuousness of the proposed project. Project dominance is rated moderate.

From KOP 1, the only notable visible landscape feature that may be blocked from view or have its continuity disrupted is the distant hills within the community of Pedley. The severity of the view disruption is considered very low because of the limited amount of view blockage, the distance to the hills, and the short duration of view from KOP 1.

Individuals traveling west on Jurupa Avenue would not normally view the project site, as it would be at a 50 degree angle from the roadway from KOP 1 and would be visible very briefly. The view from east bound travelers would require an individual to look over their shoulder to see the project. These are the only views that individuals traveling on Jurupa Avenue would have of the RERC. All other potential views from Jurupa Avenue are blocked by existing commercial/industrial buildings and landscaping.

From KOP 1, the overall visual change caused by the proposed project would be moderately low due to the moderately low degree of contrast, very low view disruption, and the project's co-dominant (moderate) structures.

The proposed project when considered within the context of the moderately low visual sensitivity of the existing landscape and viewing characteristics, the moderately low degree of visual change that would be perceived from the area of KOP 1 would cause a less than significant visual impact.

### **Electric Transmission Line**

The entire length of the new transmission line route is approximately 9,000 feet. The transmission line intercept point for the new line is approximately 400 feet outside the Mountain View substation. Starting at the intercept point the transmission line would cross the railroad tracks on Sheppard Street and be routed along the east side (railroad track side) of Sheppard Street about 600 feet to Jurupa Avenue. The transmission line would then follow an east/west alignment along the south side of Jurupa Avenue to Payton Street where the line will extend 600 feet along the east side of the street to the RERC. The new poles will be replacing the existing 50-foot wood poles. The new transmission poles will also have street lamps attached to them.

Approximately 6,000 feet of the transmission line route will be within the M-P (Manufacturing Park) Zone and the M-1 (Light Manufacturing) Zone. Three-thousand feet of transmission line will be within the R-1-65 (Residential) Zone.

The proposed transmission line's 80-foot poles would have a base of 3-5 feet. The SPPE states that wood or steel galvanized poles would be used along the transmission line route. The applicant is considering the use of wood, a wood façade or simulated wood colored covering on transmission poles that border residential areas. The applicant has provided photo-simulations of galvanized steel transmission poles.

Construction of the new transmission line would require use of mobile cranes to lift the poles into place, as well as several large trucks to supply and pull the new and existing transmission lines along the new poles, and several smaller support trucks.

Construction of similar lines takes approximately two to three weeks, and construction activities would be visible from each of the residences along the route for approximately 3 or 4 days of that time.

### **KOP 2 – Jurupa Avenue between Chester and Florence Street**

**Visual Resources Figure 4** presents a photo-simulation of a portion of the proposed 69 kV 80-foot-tall transmission pole line along a residential neighborhood on Jurupa Avenue (in the foreground). From this KOP, structures maintain a simple residential character obscured by an approximate 15-foot hedgerow and 30-foot trees. In the background are lines of trees. The major colors in this view are dark green and light blue. The contrasting dark green of the vegetation and the blue of the sky add variety and interest.

The proposed 80-foot-tall transmission pole line are vertical man-made elements that would extend above the existing tree line and be seen against the background of sky from the back yards and front yards of residences, and to travelers along Jurupa Avenue. The medium gray color depicted for the galvanized steel poles potentially contrasts with the colors of the hedgerow, trees and existing residential buildings in the panoramic view. The new transmission poles height and color would make it more conspicuous when compared to landscape components and their surroundings at this view. Overall visual contrast with the existing setting with the new transmission poles is moderately high.

The proposed transmission pole line would be 80 feet tall and have a 3-5 foot base. The transmission pole line would appear co-dominant in scale when compared to other landscape components. The transmission poles and lines would be taller than existing structures and trees and would be seen against the sky. However, they would occupy a moderate portion of the field-of-view from KOP 2. Dominance is rated moderate.

From KOP 2 the transmission pole line would not block sensitive views from residences along the street. However, the continuity of the view would be disrupted by the new transmission line's larger poles carrying more wires (conductors) than the existing wood poles to be replaced. View disruption at KOP 2 is rated moderate.

From KOP 2, the overall visual change caused by the proposed transmission line and poles would be moderate due to the moderate contrast, moderate view disruption, and its co-dominant structures (moderate dominance).

When considered within the context of the moderately high visual sensitivity of the existing landscape and viewing characteristics (industrial, residential and mixed use areas), the moderate degree of visual change that would be perceived from the area of KOP 2 would generate a less than significant visual impact.

Staff recommends that the City design review consider that new transmission poles be made of wood, or use a low reflecting material or exterior covering or paint where they border residential areas.

### **KOP 3 – Sheppard Street near Jurupa Avenue**

**Visual Resources Figure 5** presents a visual simulation of the proposed 69 kV 80-foot-tall transmission pole line as viewed from KOP 3. The KOP represents a view along the railroad tracks looking south southeast at the new transmission line along Sheppard Street. From this KOP, structures maintain a simple residential character. In the background are lines of trees. The major colors in this view are dark green and light blue.

The proposed transmission poles represent vertical man-made elements of the project that would be visible from the front yards of residences along Sheppard Street. Although the vertical elements of the transmission line would contrast with the flat horizontal field, vertical man-made features have been established in the landscape, such as 80-foot-tall transmission poles, street lamps, and the Mountain View substation structure which are visible from residences along the street. Overall visual contrast is rated moderately low.

Although the transmission pole line would be taller than existing structures and trees and seen against the sky making it more conspicuousness, the transmission poles and lines would be similar in height to existing transmission pole lines in the back ground of the view that cross the railroad tracks. The transmission pole line would appear moderately small in relative scale when compared to landscape components and their surroundings. It would occupy a moderate proportion of the field-of-view from KOP 2. Dominance is rated moderately low.

From KOP 3 the transmission pole line would not block sensitive views from residences along the street. The proposed transmission line would have little effect on the continuity of the KOP 3 view. Viewers currently experience unobstructed views of existing wood transmission poles, railroad tracks and freight trains which already provide a visual disruption to the residential character of the area. View disruption at KOP 3 is rated low.

From KOP 3, the overall visual change caused by the proposed transmission line and poles would be moderately low due to the moderately low degree of contrast, moderately low dominance and low view disruption.

The applicant has proposed constructing the new transmission line on the east side of Sheppard Street to minimize the impact to residences. When considered within the context of the moderate visual sensitivity of the existing landscape and viewing characteristics, the moderately low degree of visual change that would be perceived from the area of KOP 3 would generate a less than significant visual impact.

Staff recommends that the City design review consider that new transmission poles be made of wood, or use a low reflecting material or exterior covering or paint where they border residential areas.

### **Natural Gas and Cooling Water Supply Pipelines**

The installation of the 140-foot natural gas pipeline construction activities may be visible to users in the regional parkway and the community of Pedley for a short period of time. The project proposes a 140-foot underground pipeline to connect the existing Sempra pipeline to the RERC.

The RERC will use reclaimed water supplied from the Riverside Waste Water Treatment Plant which adjoins the proposed power plant site. A proposed pipeline will essentially “pass through the fence” between the two facilities.

After installation of the linear facilities, the areas disturbed by construction activities would be returned to their pre-construction condition, thereby minimizing the impact on the landscape.

### **Combustion Exhaust and Cooling Tower Plumes**

The RERC project is proposed to be a simple cycle power plant that would include two 80-foot-tall combustion exhaust stacks and a 42-foot-tall three-cell chiller/cooling tower package. The applicant has not proposed to use any methods to abate visible plumes.

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. No significant visual impacts are anticipated due to the very low frequency of occurrence of the combustion exhaust water vapor plumes.

The primary cooling load of the cooling towers would be the inlet air chillers. The cooling towers 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 did not conduct plume modeling for the project. Staff’s evaluation of the RERC cooling tower visible water vapor plumes is based on recent modeling conducted by staff for the Los Esteros Critical Energy Facility (LECEF), also a simple-cycle power plant with similarly operated cooling towers. The LECEF cooling tower load is four times the load of RERC, and the humidity of the LECEF project area (San Jose) is much higher than it is in Riverside. Based on this comparison, staff can conclude that the cooling tower plume potential for the RERC project would be very low and any plumes that would form would be expected to be small. Therefore, RERC plumes would not result in a significant visual impact.

### **D. Light or Glare: Less Than Significant Impact**

Sources of existing night lighting in the vicinity of the RERC site includes streetlights, and area and perimeter lighting of existing commercial and industrial development for safety and security reasons.

The RERC project also requires nighttime lighting for operational safety and security. If project lighting were uncontrolled, the resultant direct light trespass and uplighting to the nighttime sky could cause significant adverse visual impacts on nearby sensitive visual receptors, such as residences in the community of Pedley.

The applicant is committed to minimizing offsite lighting impacts. Specifically, the applicant has proposed to install lights that are shielded and directed downward, and to install separate switches for the lights on the tallest structures, such as the exhaust stacks, so they could remain turned off except during maintenance activities. With 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 nighttime views.

The simulations of the proposed facility provided by the applicant show the utilization of a surface treatment for major project structures, buildings, and tanks in the public view that will use a color (e.g. gray) and a finish that will not create excessive glare and will minimize visual intrusion and contrast. With the applicant's commitment to treat project structures in a manner that minimizes visual contrast and glare, the project would not be a source of substantial glare that could adversely affect views.

### **CUMULATIVE IMPACTS**

As defined in Section 15355 of the CEQA Guidelines (California Code of Regulations, Title 14), a cumulative impact consists of an impact created as a result of the combination of the project together with other projects causing related impacts. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

Cumulative impacts to visual resources could occur where project facilities or activities (such as construction) occupy the same field of view as other built facilities or impacted landscapes. It is also possible that a cumulative impact could occur if a viewer's perception is that the general visual quality of an area is diminished by the proliferation of visible structures (or construction effects such as disturbed vegetation), even if the new structures are not within the same field of view as the existing structures. The significance of the cumulative impact would depend on the degree to which (1) the viewshed is altered; (2) visual access to scenic resources is impaired; or (3) visual quality is diminished.

Staff reviewed the City of Riverside's building permit activity list ending the week of June 5, 2004 and concluded that there are no projects under construction, nor any recently approved in the immediate area surrounding the RERC project site.

The City's waste water treatment plant is in the second year of a six-year Capital Improvement Program which includes an increase in plant capacity, and replacing infrastructure that has become old and expensive to maintain and to keep the plant up to date with regulatory requirements. In addition to on-site improvements, sewer upgrade projects are proposed throughout the city. Based on the RERC application and input from the City of Riverside, it is unlikely that construction or material deliveries related to the RERC project would be scheduled to take place at the same time as on-site activities associated with the Capital Improvement Program.

The project site is on the City of Riverside Waste Water Treatment Plant. The treatment facility has been landscaped and its buildings maintain a similar architectural design.

The RERC and several of the Capital Improvement Program activities are public projects that are subject to design review by the City of Riverside in order to comply with the City's municipal code, specifically Title 19 Zoning, Chapter 19.62 Design Review.

Because of the commercial/industrial nature of the area and the very limited visibility of the proposed power plant, the project does not generate a cumulatively considerable impact.

## **CONCLUSION**

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With the effective implementation of the applicant's mitigation measures as described in the SPPE Application and supplements thereto, and subsequent project and associated facilities modifications, such as the re-routing of the transmission line to place it along the east side of Sheppard Street, the City of Riverside has sited and designed the RERC project and its associated facilities to avoid or mitigate any impacts from project structures and building surfaces visible to the public.

The applicant's utilization of a surface treatment for major project structures, buildings, tanks and transmission poles in the public view that will use a color and a finish that will not create excessive glare, minimize visual intrusion and contrast ensure that no significant direct or cumulative visual impact on the environment would take place.

Furthermore, staff is confident that the City of Riverside will ensure through their review (City of Riverside Municipal Code, Title 19, Chapter 19.62 Design Review), mitigation monitoring and reporting processes that the measures proposed for the RERC are effectively implemented. Therefore, the proposed RERC project would generate a less than significant direct and cumulative visual impact.

## **CONDITION OF EXEMPTION**

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None recommended.

## **REFERENCES**

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City of Riverside Municipal Code, Title 19, Chapter 19.54 Railroad (RWY) Zone.

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RERC (Riverside Energy Resource Center) 2004f: Applicant's Supplemental Data Response, Re: 69 kV Transmission Line Route. Email submitted to the California Energy Commission on July 6, 2004.

Cited in the text as: (RERC 2004f)

## **APPENDIX VR-1: STAFF'S VISUAL RESOURCES EVALUATION METHODOLOGY**

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Staff's analysis of potential impacts to Visual Resources caused by construction or operation of any power plant or related facility largely involves answering the four questions found in Appendix G of the CEQA Guidelines, under Aesthetics. The four questions that must be addressed regarding whether the potential impacts of a project are significant are:

1. Would the project have a substantial adverse effect on a scenic vista?
2. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
3. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
4. Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

The visual analysis typically distinguishes between three different impact durations: temporary impacts, typically lasting no longer than two years; short-term impacts, generally last no longer than five years; and long-term impacts, which are impacts with a duration greater than five years. In general, short-term impacts are not considered significant.

In addition to visiting the project area for personal observation of how and whether a particular view is experienced, staff also searches for other evidence to determine if the local community values a particular view that might be affected by the project. This includes searching the applicable planning documents covering the area produced by local governments and community groups, as well as searches for any other type of evidence showing whether valued scenic vistas exist within the project's viewshed. Staff relies primarily on personal observation of the project site to make initial determinations of visual character or quality of the area, in comparison with all other landscapes in California, but also gives due deference to official statements by elected governmental bodies concerning the value of visual resources within the project area.

Staff answers each of the four checklist questions for each part of the project both during construction and during operation, including any related facility such as a transmission line or gas pipeline. To answer the first checklist question (Would the project have a substantial adverse effect on a scenic vista?), staff must determine if any such scenic vista exists within the viewshed of the various aspects of the project, and then determine if the project would have a substantial adverse effect on that vista.

To help make these determinations, visual resource professionals often answer a series of questions developed to help focus the analysis, and examine various ways that the project could create an impact to scenic vistas. The Energy Commission's Visual Resources staff has developed such a list for each of the four CEQA guideline questions, drawing upon published methodologies and academic resources (Smardon,

et al.), as well as on past experience with other power plant siting cases. Questions developed to help determine whether the project would significantly affect a scenic vista include:

1. Is the project located in the scenic view of a local/state/federal-designated scenic vista?
2. Is there compelling evidence to show that the view is designated/valued by the local community?
3. Will the project eliminate or block views of valuable visual resources?
4. Would the project create a water vapor plume that could have an adverse effect on a state/federal/local-designated scenic area or scenic resource?

To help answer the second CEQA checklist question above (Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?), staff developed the following questions:

1. Is the project located in the scenic view from a local/state/federal-designated scenic highway?
2. Does the project site or its immediate vicinity contain scenic resources, such as trees, rock outcroppings, or historic structures that could be damaged by the project?
3. Would the project create a water vapor plume that could have an adverse effect on the view from a local/state/federal-designated scenic highway?

To answer the third question (Would the project substantially degrade the existing visual character or quality of the site and its surroundings?), staff assesses the existing visual character and quality of the project area, and then determines how the project would affect the character and quality of the project viewshed. To assess whether the project has the potential to substantially degrade the present visual character or quality, staff uses personal observation and such tools as visual simulations to determine if an impact is significant and mitigation is required to reduce the impact to a less-than-significant level. To make that determination, staff examines many factors, such as: how many viewers can see a particular view and for how long, collectively called "viewer exposure"; and to what degree would the project change the aspects of a given view, such as whether the project's components would block a particular view.

To help determine how the community rates and values the visual character and quality of a given site, and whether the project would substantially alter the present visual character or quality, staff developed the following questions:

1. How many residential, recreational, and traveling (motorist) viewers have views of the project?
2. Is the project site properly zoned?

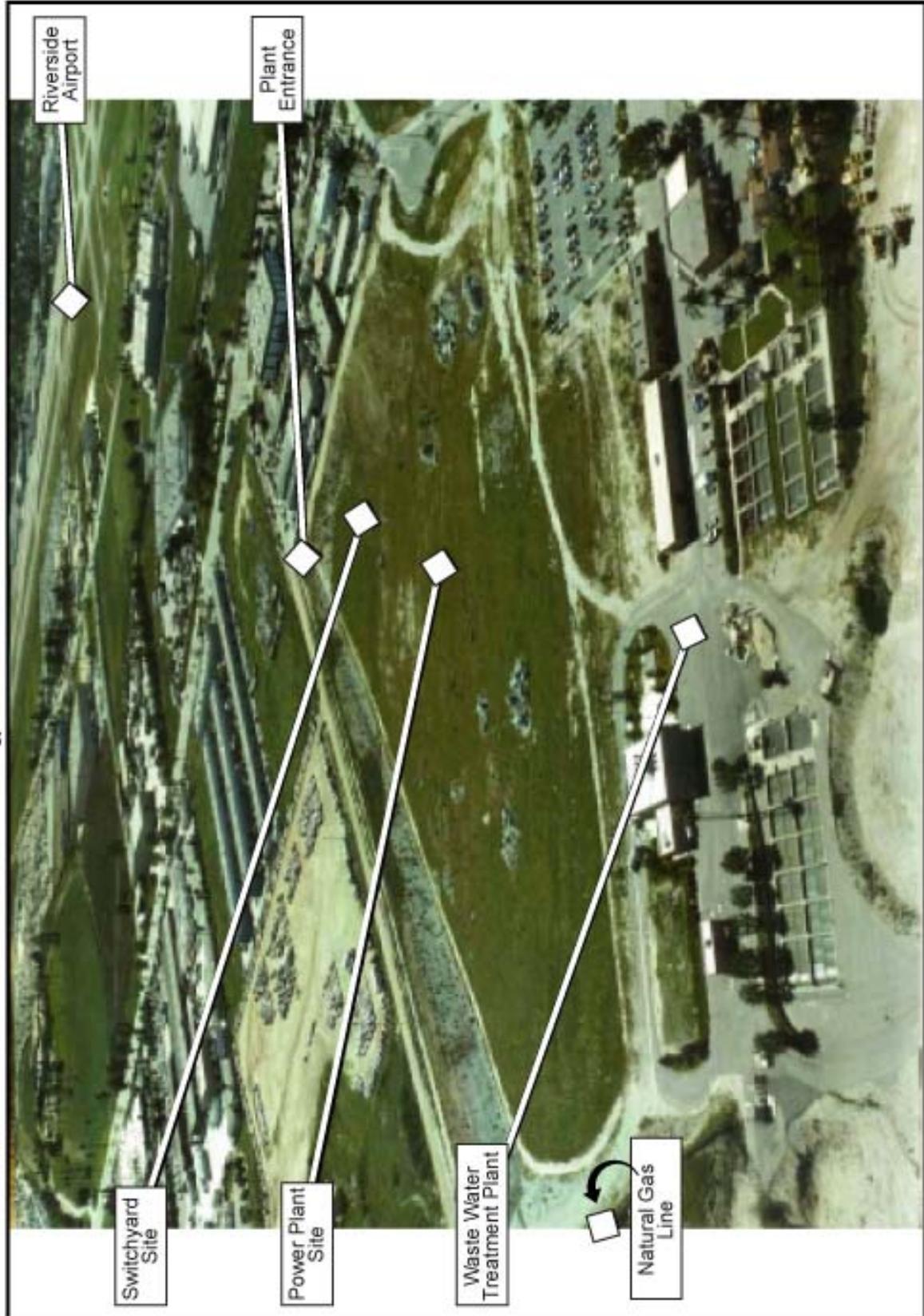
3. Would a conditional use permit and/or height variance have been required from the city/county (if so what conditions would the city/county place on the power plant)?
4. Does the project conform to the clear written declarations of local/state/federal agencies to protect designated visual resources of importance or the valued aesthetic character of a neighborhood (said declaration must be clear, concise, and uncompromised by conflicting declarations, and be an official action of the governing body (City Council/Board of Supervisors) such as a General Plan element, zoning ordinance, or design guideline)?
5. Will the project substantially alter the existing viewshed, including any changes in natural terrain?
6. Does the project substantially change the existing setting?
7. Has the applicant proposed landscaping?
8. Would the project create a water vapor plume that could have an adverse effect on a KOP view?

The process of answering these questions includes an examination of the present views within the project viewshed in terms of aesthetics – i.e., by examining the various aspects that together define the quality of a view – followed by an assessment of how the various aspects of the aesthetics of the view would be affected by the project, which conversely could be described as an analysis of how well the project area can absorb the various aspects of the project into the landscape.

To answer the fourth CEQA Guidelines checklist question (Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?), staff analyzes the project's lighting plans to ensure they fit with established norms for low-impact lighting designs, and then answers the following questions to determine if a potential for impact from night-lighting exists:

1. With the Energy Commission's standard condition of certification for lighting control, would light or glare be reduced to acceptable levels?
2. Will the project result in significant amounts of backscatter light into the nighttime sky?

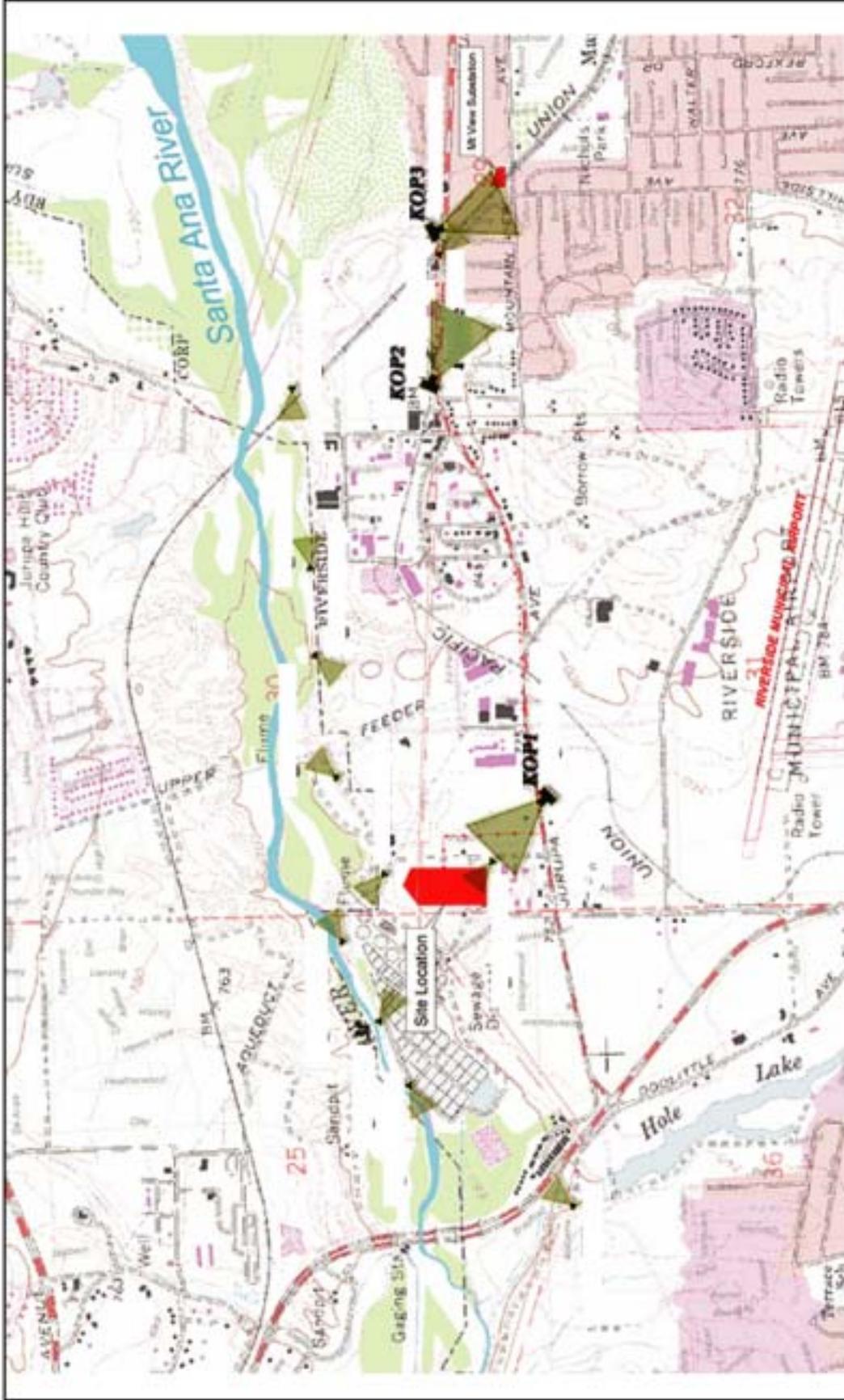
**VISUAL RESOURCES - FIGURE 1**  
Riverside Energy Resource Center - Aerial of Site



JULY 2004

VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 2  
 Riverside Energy Resource Center - KOP Location Map



**VISUAL RESOURCES - FIGURE 3**  
Riverside Energy Resource Center - KOP 1

Looking North Northwest Approximately 275' East of the Jurupa Ave. and Payton Ave. Intersection

*Existing View*



*Simulation View*



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2004  
SOURCE: Photos by Riverside Public Utilities/Power Engineers - 7/30/03 - KOP 1 Fig 6.11-7a

**VISUAL RESOURCES - FIGURE 4**  
Riverside Energy Resource Center - KOP 2

Looking East on Jurupa Ave. between Chester St. and Florence St.

*Existing View*



*Simulation View*



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2004  
SOURCE: Photos by Riverside Public Utilities/Power Engineers - 7/30/03 - KOP 2 Fig 6.11-8a

**VISUAL RESOURCES - FIGURE 5**  
Riverside Energy Resource Center - KOP 3

Looking South Southeast just East of the Jurupa Ave. Sheppard Rd. Intersection

*Existing View*



*Simulation View*



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2004  
SOURCE: Photos by Riverside Public Utilities/Power Engineers - 7/30/03 - KOP 3 Fig 6.11-9a

# WASTE MANAGEMENT

Testimony of Ellie Townsend-Hough

## INTRODUCTION

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The purpose of this section is to assess the potential impacts associated with the Riverside Energy Resource Center (RERC) project's proposed generation and management of hazardous and nonhazardous wastes. Energy Commission staff's objective is to ensure that there will be no significant adverse impacts from wastes generated during the project's life-cycle. A brief overview of the project is provided, as are discussions regarding important checklist items with respect to hazardous and nonhazardous wastes. A discussion of additional items listed in the Hazards and Hazardous Materials portion of the checklist is in the **Hazardous Materials Management** section of this Final Initial Study (FIS). The section concludes with staff's proposed conditions of exemption.

## SETTING

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Riverside Public Utilities (RPU) proposes to construct, own, and operate an electric generating facility in Riverside, California (RERC 2003a). The proposed facility would consist of a simple-cycle power plant rated at a nominal gross generating capacity of 96 megawatts (MW). The proposed eight-acre project site is to be situated within a 12-acre parcel. The Phase I Environmental Site Assessment (ESA) determined the proposed project site is vacant land and has been throughout its researched history (RERC 2004b). Although the ESA states that the site was used for dry land farming and as a borrow site for fill soil (RERC 2004b), WATER AND SOIL RESOURCES Data Response 48 provides the following clarification concerning the proposed site's historical uses (RERC 2004c):

“Personal communication with Ernie Meloy, a long-standing employee with the Riverside Regional Water quality Treatment Plant helped clarify the plant site's past use. According to Ernie, the plant site proper was not used for agricultural production. An agricultural day labor camp occupied the site from the mid-1940s and was likely active into the early 1960s.”

In 1995 and 1996, 30 feet of top soil was removed from the site (CEC/Power Engineers 2004).

Both non-hazardous and hazardous wastes would be generated during all phases of the facility's permitted existence as described below.

## IMPACTS

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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.

<b>ENVIRONMENTAL CHECKLIST</b>	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>HAZARDS AND HAZARDOUS MATERIALS – Would the project:</b>				
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
<b>UTILITIES AND SERVICE SYSTEMS – Would the project:</b>				
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 impacts relating to waste management 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 related to solid waste.

The basis for the outcomes provided in the checklist is discussed below.

## **A. Create a Significant Hazard to the Public Through Routine Transport, Disposal or Use of Hazardous Materials: Less Than Significant with Mitigation Incorporated**

### **Preconstruction**

Staff reviewed the Small Power Plant Exemption (SPPE) application and the Phase I Environmental Site Assessment (ESA) for the RERC project. The ESA, by LOR Geotechnical Group, Inc. determined that the property showed no evidence of recognized environmental conditions and therefore there is no need for further assessment. In addition to the ESA, LOR performed additional geotechnical investigations, where they drilled 29 soil borings at depths 11.5 to 36.5 feet and dug 33 exploratory trenches between 1 and 11 feet. LOR found that there were no subsurface structures, unusual odors, or any stained soil (RERC 2004b). Staff agrees with the conclusions and recommendations of the ESA.

Staff also reviewed and agrees with the results of LOR Geotechnical Group's Environmental Database Review (Review) included in the ESA. The Review indicates that there are no sites that would adversely environmentally impact the RERC project site.

### **Construction**

Site preparation and construction of the proposed generating plant would generate both nonhazardous and hazardous wastes in solid and liquid forms.

#### ***Nonhazardous Wastes***

Nonhazardous solid wastes generated during construction include minor amounts of wood, paper, glass and plastics, concrete, and scrap metal. Wherever possible and practical, these wastes would be recycled. Nonrecyclable wastes would be collected and disposed of in a Class III landfill. A possible exception might include the disposal of the waste concrete in a clean fill site, if one is available.

#### ***Hazardous Wastes***

Hazardous wastes anticipated to be generated during construction may include spent welding materials, oily rags and absorbent, spent batteries, and empty hazardous materials containers. Liquid hazardous wastes would include waste oil; flushing, cleaning and passivating (nitrate or phosphate solution) fluids; and waste solvents, paints and other material coatings. Wherever possible, the treatment method of choice for these wastes would be recycling at a permitted facility. The cleaning, flushing and passivating liquids would be sampled and characterized, and disposed of accordingly. Any non-recyclable hazardous wastes would be properly disposed of in a permitted Class I landfill.

### **Operation and Maintenance**

The proposed RERC would generate both nonhazardous and hazardous wastes in solid and liquid forms under normal operating conditions.

### ***Nonhazardous Wastes***

Nonhazardous solid wastes generated during plant operation are expected to include rags, turbine air filters, machine parts, electrical materials, empty containers, and typical worker and small office wastes.

### ***Hazardous Wastes***

Hazardous wastes anticipated to be generated during routine project operation include waste lubricating oil, used oil filters, laboratory waste, selective catalytic reduction (SCR) and oxidation catalysts, oily rags and absorbents, and used acidic and alkaline chemical cleaning wastes (potentially containing high concentrations of heavy metals). Most of the wastes would be generated in relatively small quantities and would be recycled by certified recyclers (RERC 2004a).

The applicant proposes to use a Zero Liquid waste discharge system. The ZLD wastes have the potential to exhibit hazardous characteristics. If classified as hazardous, the ZLD wastes will need to be appropriately classified, stored for fewer than 90 days, transported, and disposed of in accordance with all applicable federal, state and local hazardous waste requirements. Should the ZLD wastes be deemed non-hazardous, it is possible that the wastes could be characterized as "California designated wastes" due to their potentially high inorganic matter (solids) content. This category of waste is either non-hazardous waste that contains pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or could reasonably be expected to affect the beneficial uses of the waters of the state (Water Code, § 13173(b)) or hazardous waste which has been granted a variance from hazardous waste management requirements pursuant to Section 66310 of Title 22 of the California Code of Regulations. Designated wastes are required to be discharged to fully contained Class I or II disposal sites. (Cal. Code Regs. tit. 27, § 20210). However, a designated waste can be discharged to a Class III disposal site if it can be demonstrated that there is a lower risk to water quality than indicated by the 'designated waste' classification. In order to ensure proper and adequate characterization and disposal of the wastes, staff proposes Condition of Exemption **WASTE-1**.

### **B. Handle Hazardous Waste Within One-quarter Mile of an Existing or Proposed School: No Impact**

There are no schools within one-quarter mile of the proposed project. The nearest public schools are Mission Middle School approximately at 0.08 mile, Indian Hills Elementary School at 0.8 mile, Terrance Elementary approximately 1.1 miles west of the Project site, Foothill Elementary approximately 2 miles southwest of the Project site, and Norte Vista High approximately 1.4 miles west of the Project site. The nearest private school is United Submission Academy on Jurupa Ave, approximately 0.3 miles from the facility. At these distances, there is virtually no risk of a hazardous plume causing an off-site impact.

### **C. Located on a Hazardous Waste Site: No Impact**

The proposed site is not located on any list of hazardous materials sites compiled pursuant to Government Code section 65962.5.

#### **D. Served by a Landfill with Sufficient Capacity: Less Than Significant Impact**

Project operation would generate approximately 20 cubic yards/ month of nonhazardous solid wastes typical of office and maintenance activities at an industrial facility. Anticipated wastes include paper, trash, plastic, and other materials.

The total amounts of all nonhazardous solid wastes from both construction and operation activities will slightly reduce the available capacity of the Badlands Landfill, the identified disposal facility, but will not significantly affect either its daily capacity or anticipated remaining lifetime. Haz Mat Trans is the existing contractor for the City of Riverside for disposal of municipal solid waste. Haz Mat Trans uses the Badlands Landfill east of Moreno Valley. Badlands is permitted to accept 4,000 tons per day of waste. Badlands landfill had remaining capacity of 11,387,809 tons (Data Response 71, RERC 2004c). Thus, this impact will be less than significant, given the capacity of the landfill and the inclusion of recycling efforts.

Similarly, the project's small amounts of hazardous waste generated during operation would insignificantly affect the capacity of the state's Class I (hazardous) landfills at Buttonwillow or Kettleman Hills (Id.). Even if the ZLD waste (salt cake or concentrated brine) is classified as hazardous, there would be sufficient capacity at California's Class I landfills to dispose of the waste over the life of the project. These landfills have in excess of 20 million cubic yards of remaining capacity and closure dates around 2030.

#### **CUMULATIVE IMPACTS**

Due to the minor amounts of wastes generated during project construction and operation, the less than significant impacts on individual recycling and disposal facilities, and the availability of regional landfills, cumulative impacts will be insignificant for both hazardous and nonhazardous wastes.

#### **RESPONSE TO AGENCY COMMENTS**

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##### **Department of Toxic Substance Control**

The Department of Toxic Substance Control (DTSC) reviewed the SPPE and identified data needs relating to potential site contamination and waste management (DTSC 2004). The list included information that would typically be contained in a Phase I ESA, as the ESA was not available at the time of DTSC's review. The applicant subsequently completed an ESA according to the Standard Practice for Environmental Site Assessments, designated ASTM E 1527-00 (RERC 2004b). Staff believes that DTSC'S concerns were addressed by the information contained in the ESA showing that there is no reasonable likelihood of existing contamination at the proposed site.

## RESPONSE TO INTERVENOR COMMENTS

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### California Unions for Reliable Energy (CURE)

At the July 15, 2004 Draft Initial Study Workshop CURE stated their concern about the quality of the reclaimed water proposed to be used at RERC in the ZLD, and if that would make the resulting ZLD waste (salt cake or concentrated brine) hazardous. Staff does not believe that the quality of the water will affect the management of wastes from the project. All waste from the ZLD will be disposed of in an appropriate landfill. The type of landfill will be determined by the results of the tests performed on the ZLD waste. A discussion of ZLD testing is discussed in Condition of Exemption **WASTE-1** of this Final Initial Study (FIS).

## CONCLUSIONS

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Management of hazardous and nonhazardous wastes generated during construction and operation of the RERC Project will not result in any significant adverse impacts if RERC implements the waste management procedures described in the SPPE application and staff's proposed Condition of Exemption WASTE-1.

## PROPOSED CONDITION OF EXEMPTION

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**WASTE-1:** The project owner shall determine if the ZLD generated waste is hazardous or nonhazardous pursuant to sections 66261.3 and 66262.11 of Title 22 of the California Code of Regulations. Testing of representative samples of the wastes shall incorporate the methods set forth in Chapter 11, Division 4.5, Title 22 California Code of Regulations. If deemed nonhazardous, then future sampling and testing is not required unless there is a substantial change in the wastewater treatment process or due to cross-contamination between materials and/or processes. If not classified as a hazardous waste, the project owner shall discharge all ZLD generated waste only to those disposal facilities that are authorized to accept such a waste, unless it is sold as a commercial product. If the ZLD generated waste is deemed hazardous, the project owner will comply with all hazardous waste LORS.

**Verification:** No later than 45 days after the initial generation of the ZLD wastes, the project owner shall notify the CPM of the test results and the planned disposal methods. A copy of the acceptance letter from the disposal facility that is authorized and willing to accept the ZLD wastes shall also be included.

## REFERENCES

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CEC/Power Engineers. 2004. Record of Conversation between Kevin Lincoln, RERC: Ellie Townsend-Hough and Kevin Lincoln June 21, 2004: Previous land uses at the proposed project site.

DTSC (Department of Toxic Substances Control) 2004: Letter to James Reede  
Submitted to the California Energy Commission on June 9, 2004.

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: Applicant's Phase I Environmental  
Site Assessment. Submitted to the California Energy Commission on June 8,  
2004.

RERC (Riverside Energy Resource Center) 2004c: Applicant's Data Responses 1 – 72.  
Submitted to the California Energy Commission on June 14, 2004.

Walters, Will. 2004. Email from Will Walters RECR: Will Walters to Ellie Townsend-  
Hough, June 30, 2004: Link to map of sensitive receptors  
<http://www.jusd.k12.ca.us/map.asp>.

# GENERAL CONDITIONS OF EXEMPTION

## INTRODUCTION

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The Riverside Energy Resources Center (RERC) Project Compliance Plan will be developed to help track Conditions of Exemption. 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 Conditions of Exemption detailed in the technical subject area analysis includes a verification statement describing the means by which compliance with the condition can be verified. The verification procedures may be modified by the Commission Compliance Project Manager (CPM) as necessary to ensure compliance with the adopted Conditions of Exemption. Verification of compliance with the Conditions of Exemption will be accomplished by periodic reports filed by RERC as required by the general Conditions of Exemptions.

## I. DEFINITIONS

To ensure consistency, continuity and efficiency, the following terms, as defined, apply to all technical areas, including Conditions of Exemption:

### **SITE MOBILIZATION:**

Site mobilization occurs when 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 occurs when onsite activity 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:**

Grading occurs when onsite activity conducted with earth-moving equipment 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 means onsite work to install permanent equipment or structures for any facility. Construction does **not** include the following:

1. The installation of environmental monitoring equipment.
2. A soil or geological investigation.
3. A topographical survey.
4. Any other study or investigation to determine the environmental acceptability or feasibility of the use of the site for any particular facility.
5. Any work to provide access to the site for any of the purposes specified in a., b., c., or d.

**COMPLIANCE PROJECT MANAGER**

A Compliance Project Manager (CPM) will be designated to oversee compliance with Conditions of Exemption. The assigned CPM, after consultation with the appropriate technical staff, and approval of Commission management and responsible agencies, shall:

1. Ensure that compliance files are established and maintained for the RERC project;
2. Track compliance filings;
3. Ensure the timely processing of proposed changes to the Commission Decision;
4. Use all available means to encourage the resolution of disputes; and
5. Coordinate compliance monitoring activities of Commission and delegate agency staff as specified in the Conditions of Exemption.

**PROJECT OWNER RESPONSIBILITY**

It shall be the responsibility of the project's owner and operator, RERC, to comply with and ensure that the compliance general conditions and all Conditions of Exemption are satisfied. 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.

RERC shall send verification submittals to the CPM, whether such condition was satisfied or work performed by RERC or other agent, and whether or not such verification was also submitted to the CPM by an agent.

## **COMPLIANCE RECORD**

RERC shall maintain, for the life of the project, files of all Conditions of Exemption correspondence, and final as-built drawings.

The Commission shall maintain as a public record:

1. All documents received regarding compliance with the Conditions of Exemption;
2. All complaints filed with the Commission; and
3. All petitions for changes to Conditions of Exemption and documentation of the resulting staff or 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 MONTHLY REPORTS**

The project owner must submit construction monthly reports to the CPM and City of Riverside as designated to assist in tracking activities and monitoring compliance with the terms and conditions of the Commission Decision. During construction, the project owner or authorized agent will submit monthly reports for air quality, hazardous material, and water.

### **Tasks Prior to Start of Construction**

Construction shall not commence until all pre-construction Conditions of Exemption have been complied with. 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.

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 report is due the month following the Energy Commission business meeting date on which the project was approved, unless otherwise agreed to by the CPM.

During pre-construction and construction of the project, the project owner or authorized agent shall submit an original and three copies of the monthly report within 10 working days after the end of each reporting month. Monthly reports shall be clearly identified for the month being reported. The reports shall contain at a minimum:

1. a transmittal letter summarizing the current project construction status;
2. documents required by specific conditions to be submitted along with the monthly report. Each of these items should be identified in the transmittal letter.

### **ANNUAL REPORTS**

After the air district has issued a Permit to operate, the project owner shall submit annual reports instead of monthly reports. The reports are for each year of commercial operation and are due to the CPM and City of Riverside at a date agreed to by the CPM and City of Riverside. Annual reports shall be submitted over the life of the project unless otherwise specified by the CPM and City of Riverside. The report shall contain at a minimum:

1. a transmittal letter summarizing the current project operating status and an explanation of any significant changes to the facility operations during the year;
2. documents required by specific conditions to be submitted along with the annual report. Each of these items should be identified in the transmittal letter.

### **CONFIDENTIAL INFORMATION**

Any information which RERC deems proprietary shall be submitted to the 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 Commission staff or agent, shall be granted access at any time to the project site, transmission line right-of-way, and related sites.

## **RIVERSIDE ENERGY RESOURCE CENTER PREPARATION TEAM**

PROJECT MANAGER	JAMES W. REEDE, JR., Ed.D
STAFF ATTORNEY	LISA DeCARLO
PROJECT ASSISTANT	ANGELA HOCKADAY
AGRICULTURAL & SOIL RESOURCES	TONY MEDIATI
AIR QUALITY	WILL WALTERS LISA BLEWITT
BIOLOGICAL RESOURCES	MELINDA DORIN
COMPLIANCE	DONNA STONE
CULTURAL RESOURCES	DOROTHY TORRES
ENERGY RESOURCES	KEVIN ROBINSON, STEVE BAKER
GEOLOGY, MINERAL RESOURCES & PALEONTOLOGY	DAL HUNTER
HAZARDOUS MATERIALS	GEOFF LESH
LAND USE	AMANDA STENNICK
NOISE & VIBRATION	KEVIN ROBINSON, SHAHAB KHOSHMAHRAB, STEVE BAKER
PUBLIC HEALTH	OBED ODEMELAM
SOCIOECONOMICS	JOE DIAMOND
HYDROLOGY & WATER RESOURCES	TONY MEDIATI
TRAFFIC AND TRANSPORTATION	DAVID FLORES
TRANSMISSION LINE SAFETY & NUISANCE	OBED ODOEMELAM
TRANSMISSION SYSTEM ENGINEERING	SUDATH ARACHCHIGE, DEMI BUCANEG & AL MC CUEN
VISUAL RESOURCES	MARK HAMBLIN
WASTE MANAGEMENT	ELLEN TOWNSEND-HOUGH

# **RESUMES AND DECLARATIONS**

## DECLARATION OF

James W. Reede, Jr., Ed.D.

I, James W. Reede, Jr., declare as follows:

1. I am presently employed by the California Energy Commission in the Project Management Office of the Systems Assessments and Facilities Siting Division as a Project Manager II.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the Introduction, Executive Summary, and staff testimony on Project Description for the Riverside Energy Resource Center 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: 7/6/4 Signed: James W. Reede, Jr.  
James W. Reede, Jr., Ed.D.

At: Sacramento, California

## **JAMES W. REEDE, JR., Ed. D**

6008 Wynnewood Way - Sacramento, CA 95823  
(916) 399-1133(v) - (916) 399-1137(f)  
j.reede@att.net

### **EDUCATION**

General Engineering	U.S. Military Academy		1971
Electrical & Electronics Technology	Community College of the Air Force	Certificate	1973
Organizational Behavior	University of San Francisco	BS	1979
Public Policy & Administration	California State University – Sacramento	MPPA	1998
Organization & Leadership in Public Mgmt.	University of San Francisco	Ed.D	2003

### **PROFESSIONAL TRAINING**

Process Control Engineering	General Electric Technical Training Services		1974-1976
Manufacturing Management	General Electric Management Training Services		1978-1980
	Professional Designation - American Management Assoc.		1980
Boardsmanship Academy	California School Boards Association		1982-1987
Contract Management	U.S. Air Force Institute of Technology at WPAFB		1986-1988
	Professional Designation - National Contract Mgmt Assoc.		1988
Federal Managers Training Institute	Office of Personnel Mgmt., U.S. Government		1986-1989
City Management Academy	City of Sacramento		1995
Adjunct Faculty Academy	University of San Francisco		1999
California Environmental Quality Act	UC Davis Extension		2000-2003
Planning for Higher Education Facilities	UC Davis Extension		2002

### **PROFESSIONAL EXPERIENCE**

#### **ENERGY FACILITY SITING PROJECT MANAGER II**

##### **California Energy Commission**

Feb 2000-Present

I manage the state permitting process for thermal electric power plants from the initial filing of the Application for Certification through the issuance of the final operating permit. Coordinate the efforts of other agencies and twenty-three technical discipline staff for project certification, compliance and permitting related to the California Environmental Quality Act requirements. Recommend actions, policies, and procedures affecting the licensing of projects and commission program direction.

#### **PUBLIC UTILITIES REGULATORY ANALYST III**

##### **California Public Utilities Commission**

Aug 99-Jan 2000

Performed technical and analytical research as well as consultative and advisory services in the areas of economics, finance and policy. Analyzed, evaluated, developed and recommended research methodologies and alternatives on energy related regulatory issues. Reviewed utilities' applications for revenue in various proceedings. Evaluated proposed legislation and advised Commission on potential impacts. Provided expert advice on Electric deregulation issues and testimony in support of and on behalf of the Commission.

#### **ADJUNCT PROFESSOR**

##### **CSU Sacramento, University of San Francisco & National University**

Feb 99-Present

I instruct both undergraduate and graduate students in Environmental Science, Human Resources, Operations and Production Management, State & Local Government, Public Administration, Land Use and Public Policy courses.

#### **SACRAMENTO MUNICIPAL UTILITY DISTRICT**

Jan 92-Jan 99

##### **A. Senior Contract Administrator**

Developed and issued a variety of construction and professional services solicitations and evaluated responses. Negotiate, award and manage contracts. Review and approve invoices. Developed the database to track Energy Services contracts. Responsible for all General Services, Facilities and construction contracts and budgets. Reviewed pending legislation to determine impact on District activities.

##### **B. Key Accounts Contract Specialist (Temp Assignment)**

Feb 98-Oct 98

Develop customized power contracts for use with the District's medium and large Commercial and Industrial customers. Negotiated customer rate agreements and implemented deregulation requirements into customer service contracts. Identify potential customers for Key Account targeting and develop profiles for retention in the District's base load. Functioned as a Key Account Rep for small customers.

**EDUCATION & MANAGEMENT CONSULTANT (Self-Employed)**

June 90-June 99

Provided statewide technical assistance for the California Department of Education Gender Equity Section at various school districts in the areas of minority populations, non-traditional careers, entrepreneurship, and At-Risk Youth. Successfully wrote grant proposals for Carl D. Perkins Vocational & Applied Technology Education Act funding. Developed a Manufacturing Studies curriculum for the Vocational Education Division of the California State Department of Education. Served on the CDE Editorial Advisory Board for the textbook "Visions: Rites of Passage for Young African-American Men." Advised and assisted small businesses in the development and submittal of bids and aided in contract and business management.

**DEFENSE LOGISTICS AGENCY**

March 87-May 90

**A. Chief, Production & Industrial Resources**

Managed the Production and Industrial Resources Branch in San Diego, which monitored 835 contractors and 6,400 contracts worth \$28 Billion. Responsible for production related matters such as contract performance, pre-award surveys, technical analysis of cost proposals, and progress payment reviews. Supervised the work of 27 staff that included 18 Industrial Engineers and Specialists, 7 Contract Mgmt. Assistants and 2 clerks. Interfaced with the Pricing, Engineering, Property, Contract Administration, and Transportation Branches on a daily basis. Reviewed a wide range of technical reports and analyzed data to identify production trends. Performed employee appraisals. Developed annual budget for staff and operations. Collateral duties were to establish the new San Diego Headquarters. Responsible for the site search, solicitation of lessors, the office layout, procurement of furniture, coordination of utilities installation, and logistics of the agency move.

**B. Industrial Specialist**

Nov 85-Mar 87

Managed the contracts at the GTE residency office in Mt. View, CA. Performed in-plant production surveillance, witnessed RADAR & SONAR Systems testing, analyzed cost proposals, performed pre-award surveys, reviewed progress payment requests, verified proper use of Government owned equipment, and was part of the contract negotiation team.

**CALIFORNIA PUBLIC UTILITIES COMMISSION**

Jun 84-Dec 84

**QA Engineer - SEA Consultants**

Reviewed a utility's electricity rate hike request to determine costs to be borne by users from a QA/QC cost avoidance perspective. The contract involved review of a utility's construction documents for 2 nuclear plants and determining what costs could have been avoided had QA/QC and management oversight activities been timely or properly implemented.

**GE3 CORPORATION**

May 81-Nov 85

**Project Manager / VP Projects / Principal**

Planned, budgeted and installed Wind-Farm projects valued in excess of \$30 million. Negotiated utility contracts for the sale of electricity. Supervised the Architect-Engineer for the site civil and electrical project requirements. Responsible for land leasing, planning, development, governmental interface, construction bids and contracts, procurement, and public relations. Responsible for compliance with regulatory requirements of CEQA and other state and federal laws.

**GENERAL ELECTRIC NUCLEAR DIVISION**

Jun 74-May 81

**Process Control Engineer / Supervising**

Responsibilities were in the fields of electrical/electronic nuclear control and instrumentation manufacture and test. Duties included writing Quality Plans, Inspection & Test Instructions, Material Review Board Chair, Process Monitoring, Test Technician training and liaison with the Nuclear Regulatory Commission staff during audit to verify compliance with 10CFR50. Beginning in 1978, supervised 79 electro-mechanical inspectors, electrical/electronic testers and 2 test directors. This three-year assignment was for the assembly, factory test, shipment and on-site start-up testing of the control rooms for the Perry Nuclear Power Stations I & II (Ohio) and the Clinton Nuclear Generating Station (Illinois).

**U. S. AIR FORCE**

Honorable Discharge

May 10, 1974

Service-Connected Disabled Veteran

## **PAPERS PRESENTED**

**2003 DOCTORAL DISSERTATION** "*Environmental Obstacles to Construction of Educational Facilities in California.*" University of San Francisco, May 2003, San Francisco, CA.

**1998 MASTER'S THESIS** "*A Comparative Case Study of the Response by the Sacramento Municipal Utility District to the Deregulation of the California Electric Utility Industry.*" California State University - Sacramento, Fall 1998, Sacramento, CA.

**1998** "*California Special Districts, - History, Policies and Future Problems.*" California State University - Sacramento, Spring 1998, Graduate Studies Symposium, Sacramento CA.

**1997** "*The Best Kept Secret in America - The Genius of the African-American Inventor.*" National Alliance of Black School Educators, Workshop Presenter, National Convention, Reno, Nevada.

**1997** "*Black Creativity and Science-The Genius of the African-American Inventor.*" International Conference on Black Creativity, Presenter, Morgan State University, Baltimore MD.

**1997** "*African-American Contributions to Railroad Development in the US.*" California State Railroad Museum, Guest Lecture Series, Sacramento, CA.

**1997** "*The Best Kept Secret in America - The Genius of the African-American Inventor.*" Portland Community College, Black History Month Guest Lecturer, Portland, OR.

**1997** "*Black Inventors Won the West.*" Black Cowboy Museum, Guest Lecturer, Denver, CO.

**1996** "*African-American Women Inventors.*" Annual Convention of the National Postal Women's Network, Oakland, CA.

**1996** "*African-American Inventors - The Legacy.*" University of the Pacific, Black History Month Lecturer, Stockton, CA.

**1992** "*The 1991 Redistricting Project, Reapportionment Success in Sacramento County.*" UC Berkeley, Guest Lecturer, Berkeley, CA.

**1989** "*Production Management Techniques for Monitoring of Large Defense Contractors.*" Defense Logistics Agency, Alexandria, VA.

**1982** "*Utilization of a Public Domain Design in the Manufacture of Wind Electric Generators.*" American Wind Energy Association, National Convention, Portland, OR.

**1981** "*Blacks in Energy-In or Out?*" Congressional Black Caucus Energy Braintrust, Washington, DC.

**1981** "*Blacks in Energy-In or Out?*" American Assoc. of Blacks in Energy, National Convention, Denver, CO.

**1978** "*Process Control Techniques in the Manufacture of Nuclear Control Rooms.*" American Society for Quality Control, Portland, OR.

**1977** "*Compliance with 10CFR50 in the Manufacture of Nuclear Controls and Instrumentation.*" American Society for Quality Control, Los Angeles, CA

**AWARDS**

<b>2003 Outstanding Doctoral Student</b>	University of San Francisco	May 2003
<b>1996 Community Service Award</b>	Sacramento Urban League	Oct. 1996
<b>1995 Human Rights Award</b>	Human Rights / Fair Housing Comm., City & County of Sacto.	Sept. 1995
<b>1994 Outstanding Community Leader</b>	Sacramento County	Feb. 1994
<b>1993 Alumni Achievement Award</b>	Kappa Alpha Psi Fraternity	Mar. 1993
<b>1992 NAACP Achievement Award</b>	Region IX NAACP Annual Conference	Oct. 1992

**COMMUNITY SERVICE**

<b>Planning Advisory Council Vice Chairman</b>	Sacramento County Franklin-Laguna Planning Area	2000-Present
<b>Committee Member</b>	Teacher Recruitment Committee Elk Grove Unified School District	1999-Present
<b>Advisory Board</b>	Manufacturing & Product Technology Academy Elk Grove Unified School District	1994-1996
<b>Board of Directors</b>	North Laguna Creek Neighborhood Association	1994-Present
<b>Board of Directors</b>	FamiliesFirst Foster Care Agency	1993-Present
<b>Board of Directors</b>	Habitat for Humanity	1993-1995
<b>Vice-President</b>	Sacramento NAACP	1994-1996
<b>Chairman</b>	Dance Theater of Harlem U.C. Davis Community Outreach Campaign	1992 & 1994
<b>Member</b>	Vocational Education Advisory Council Sacramento City Unified School District	1992-1997
<b>Member</b>	Minority Advisory Council KCRA-3, KXTV-10, & KOVR-13	1992-1998
<b>Commissioner &amp; Vice-Chair</b>	Human Rights/Fair Housing Commission City & County of Sacramento	1992-1994
<b>Chairman</b>	Community Advisory Committee Sacramento Regional Transit South Line	1992-1996
<b>Co-Chairman</b>	Black College Faire	1992-2000
<b>Advisor/Consultant</b>	Gender Equity Division California Dept. of Education	1991-1995
<b>Co-Chairman</b>	No. Calif. African-American Young Male Conference	1991-1997
<b>Chairman</b>	United Negro College Fund Northern California Campaign	1992-2000
<b>Chairman</b>	African-American Student Career Conference	1991-1996
<b>Co-Chairman</b>	1991 Redistricting Project	1991-1993
<b>Board of Directors</b>	Western Province Kappa Alpha Psi Fraternity	1991-1994
<b>Polemarch (President)</b>	Kappa Alpha Psi Fraternity	90/96-00/01
<b>Political Action Chair</b>	Sacramento Branch NAACP	1990-1994
<b>Chairman, Member</b>	Relocation Appeals Hearing Board City of San Jose	1985-1987
<b>Committee Member</b>	California School Boards Association Legislative & Small School Districts Committee	1983-1987
<b>Director &amp; Officer</b>	California Coalition of Black School Board Members	1982-1987
<b>Board Member</b>	Mt. Pleasant School District San Jose, Calif.	1982-1987
<b>Housing Commissioner</b>	City of San Jose	1981-1987

**INSTRUCTIONAL HISTORY**  
**COURSES TAUGHT**

**COLLEGE LEVEL COURSES**

1. Operations & Production Management	National University	Mar 99, Oct 00 & Jan 01
2. Performance Measurement Systems	National University	April 1999
3. Training for Organizations	National University	June 1999
4. Public Policy Analysis	University of San Francisco	June/Aug 1999
5. Personnel Procurement & Placement	National University	July 1999
6. State & Local Government	National University	Sept 99, Apr 01 & May 01
7. Government & Community Relations	National University	Oct 1999
8. Public Finance & Grants Admin	National University	Feb & Nov 2000
9. Managing for Productivity & Quality	National University	Mar & May 2000
10. Urban Planning & Technology	National University	Sept 00 & May 01
11. Seminar in Urban Affairs	National University	Sept 99, May 00 & Apr 01
12. Intro to Environmental Science	CSU – Sacramento	Sept 2003

**WORKSHOPS AND TEACHER IN-SERVICE**

1. Inclusion of Black Inventors into Social Science, History and Science curricula.	1994 - Present
2. Teaching the Patent and Trademark Process to Students.	1994 - Present
3. Inclusion of Careers in Technology into Life Skills lesson plans.	1991 - 1995
4. Non-Traditional Careers	1991 - 1995
5. Organizing Non-Traditional Career Fairs	1991 - 1995
6. The Integration of Career and Life Planning with academics.	1991 - 1995
7. Understanding the Young African-American Male in the School Environment	1991 - 1995

**PROFESSIONAL TRAINING COURSES TAUGHT**

1. Basic & Advanced Contract Administration	1988 - 1990
2. Principles of Contract Pricing	1988 - 1990
3. Basic & Advanced Defense Contract Negotiations	1987 - 1990
4. Defense Contract Production Monitoring I & II	1987 - 1990
5. Operating Costs, Budgets & Measurements	1987 - 1990
6. Developing a Permitting Process for Wind Generators.	1981 - 1984
7. Nuclear Control Room Testing	1974 - 1981
8. Inspection techniques for Nuclear Control and Instrumentation	1974 - 1981

**California CBEST Passed**  
**USF Adjunct Academy**

**February 1999**  
**Oct / Dec 1999**

**DECLARATION OF  
ANTONIO MEDIATI**

I, **Antonio Mediati** declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Office of the Systems Assessment and 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 **SOIL & WATER RESOURCES (Hydrology and Water Quality, & Agriculture and Soil Resources)**, 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: 7/12/04

Signed: Antonio Mediati

At: Sacramento, California



identification, calculation erosion hazard rating, conduction biological and botanical surveys, preparation of a cumulative impacts assessment, designing and proposing mitigation to project impacts, road layout and design and calculating economic feasibility of the project. I also work closely with adjacent landowners and USFS on such things as cooperative road maintenance, protecting the beneficial uses of water, determining and protecting domestic water supplies and protecting threatened and endangered species.

In writing a THP I was responsible for; preparing all environmental documents, complying with all federal, state and local regulations, submitting the THP to the California Department of Forestry and Fire Protection (CDF) for approval. I evaluated and amended the THP during the review process in conjunction with CDF, Department of Fish & Game, Department of Mines & Geology, Department of Water Resources and other interested agencies.

In administering a THP I was responsible for, explaining the provisions of the THP to the contractor. I provided professional advice throughout the operation (to the contractor, plan submitter and timberland owner), ensuring compliance with the THP as well as, all federal, state and local regulations, and submission of a work completion report to the State.

INVENTORY FORESTER  
*Sierra Pacific Industries*

YEARS EMPLOYED (1990 - 1992)  
*Redding, California*

As an Inventory Forester I was responsible for collecting information on the standing inventory of timber on company land, accessing defect and value of the timber and ability and method of harvest. I conducted Spotted Owl and Marbled Murrelet survey and THP field preparation (including establishment of watercourse and lake protection zones, watercourse classification, erosion hazard rating determination, design of mitigation measures). I participated in prescribed burning operations and supervised spray and planting crews.

CONTRACT FORESTER  
*Northwest Forest Consultants*

YEARS EMPLOYED (1988 - 1990)  
*Chico, California*

As a Contract Forester I was responsible for collecting information on the standing inventory, THP field preparation, watercourse and lake protection zone establishment and marking of timber and conducting stocking surveys

FOREST TECHNICIAN  
*Blodgett Forest Research Station*

YEARS EMPLOYED (1988 -19 88)  
*Georgetown, California*

As a Forest Technician I was responsible conducting timber inventory and marking operations. I collected cone to test for disease resistance. I also conducted competing vegetation control operations and unit mapping.

## Education

B. S. FORESTRY  
*Humboldt State University*

YEARS ATTENDED (1982 - 1986)  
*Arcata, California*

## Licenses & Certificates

Registered Professional Forester License # 2490  
California Drivers License  
Archeological Training for Resource Professionals  
Basic Wildland Firefighting Safety

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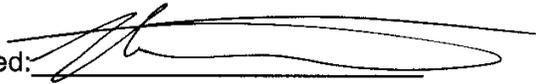
**DECLARATION OF**  
**William D. Walters**

I, **William Walters** declare as follows:

1. I am presently employed by Aspen Environmental Group, a contractor to the California Energy Commission, in the Agoura Hills office 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 helped prepare the staff testimony on **AIR QUALITY**, for the **CITY OF RIVERSIDE PUBLIC UTILITIES RIVERSIDE ENERGY RESOURCE CENTER 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: June 29, 2004

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 sixteen years of technical and project management experience in environmental compliance work, including environmental impact reports, RCRA/CERCLA site assessment and closure, site inspection, source monitoring, emissions inventories, source permitting, and energy and pollution control research.

**Aspen Environmental Group**

**2000 to Present**

Responsible as lead technical and/or project manager of environmental projects. Specific responsibilities and projects include the following:

- Preparation and/or project management of the air quality section of the Staff Assessment and/or Initial Study 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
  - Henrietta Peaker Project
  - Tracy Peaking Power Plant Project
  - San Joaquin Valley Energy Center
- Assistance in the preparation of the noise assessment section of the Staff Assessment for the Contra Costa Power Plant CEC licensing project.
- Preparation of the staff paper “Emission Offsets Availability Issues”, and preparation of the Emission Offsets Constraints Workshop Summary paper for the CEC.
- Preparation and project management of the public health section of the Initial Study for the Woodland Generating Station 2 CEC licensing project.
- Issue area coordinator providing support for the air quality analyses and/or visual plume assessments for the Inland Empire Energy Center, Los Esteros Critical Energy Facility, Palomar Energy Project, Avenal Energy Project, and the Tesla Power Plant Project.

- Preparation and/or project management of the visual plume assessment for the following California Energy Commission (CEC) 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
  - Magnolia Power 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
  - City of Vernon Malburg Combined Cycle Plant
  - Inland Empire Energy Center
  - Palomar Energy Project
  - San Joaquin Valley Energy Center
  - Woodland Generating Station 2
  - Hanford Energy Park
  - United Golden Gate, Phase I
  - Huntington Beach Modernization Project
  - Ocotillo Energy Project, Phase I
  - Colusa Power Project
  - Henrietta Peaker Project
  - Tracy Peaking Power Plant Project
  - Avenal Energy Project
  
- # Preparation of the air quality section of the PG&E Hydrodivestiture Draft EIR/EIS for the California Public Utilities Commission (CPUC).
  
- # Emission inventory for the construction activities forecast for the San Jose/Old San Jose Creeks Ecosystem Restoration project for the United States Army Corps of Engineers (USACE).
  
- # Preparation of emission inventory and Conformity Analysis of the Murrieta Creek Flood Control Project for the USACE.
  
- Preparation of permit applications, emission calculation spreadsheets, and an air quality compliance manual for Desa International's Southern California manufacturing facility.

**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 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. Project manager for the concurrent Process Safety Management plan support for the J.R. Simplot Hermiston Oregon and Heyburn Idaho facilities and the project manager/technical lead for the RMP support for the SSI food processing facility in

**WILLIAM WALTERS, page 3**

Wilder, Idaho and the Atlantic Custom Processors food processing facility in Fort Fairfield, Maine.

- # 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.
- # Air quality audit for a confidential can manufacturing company at two manufacturing sites.
- # Completion of an environmental tax credit application for the J.R. Simplot Hermiston Oregon food products facility.

**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.
- # Completion of intersection "CO Hotspots" modeling, ambient monitoring, and deposition monitoring reports for LAWA in support of the LAXMP.

**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
- # 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.
- # Review and revision of an Air Contaminant Discharge Permit application, Title V permit application, and PSD modeling analysis for J.R. Simplot's Hermiston, Oregon food processing facility.
- # Source test methodology and equipment selection for testing inlet and outlet concentrations of total petroleum hydrocarbon and benzene from soil gas extraction/oxidation units for Cascade Earth Sciences, Ltd.
- # Preparation of a Tier II (synthetic minor) permit application for the American Fine Foods' Payette, Idaho food processing facility.

**WILLIAM WALTERS, page 4**

- # Emission inventory and compliance evaluation for Simplot's Aberdeen, Idaho food processing facility.
- # Preparation of an Air Contaminant Discharge permit application for Marlette Homes, Inc. Hermiston, Oregon manufactured housing facility.
- # Preparation of a Title V permit application for Simplot's Helm, California fertilizer manufacturing facility.
- # Source test contractor selection and test oversight for J.R. Simplot's food processing plant in Hermiston, Oregon, and Boise Cascade's wood-fired boiler in Willamina, Oregon.

**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 seven properties located in Southern California.
- # Prepared Environmental Baseline Reports for 33 sites in Guam for the U.S. Navy.
- # Prepared site investigation and RCRA closure plan report for Olin Hunt Specialty Chemical's Vernon, California, hazardous waste storage site.
- # 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.
- # Task manager for nine site investigations under the EPA Region VI ARCS contract. Project activities included data collection, work plan preparation, field sampling, final report preparation, and Hazard Ranking System (HRS) PRescore preparation.
- # For the Hanford (Washington) Waste Vitrification Project,
  - prepared an air emission inventory for criteria pollutants
  - prepared an emission inventory and compliance evaluation of toxic air pollutants
  - performed compliance review of design drawings and equipment specifications
  - analyzed failure probability and consequence analysis of design-basis accidents.
- # Prepared fugitive and point source VOC emission estimates and performed a "Top-Down" BACT analysis for a 217 MMBtu/hr steam boiler for a proposed ethanol production facility in Great Falls, Montana.
- # 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 (under California's AB2588), prepared for U.S. Borax's boron mining and refining facility and the Naval Aviation Depot (North Island Naval Base, San Diego, California).
- # Prepared air permit applications and regulatory correspondence for several facilities:
  - U.S. Department of Energy's Feed Material Production Center uranium processing facility in Fernald, Ohio
  - Emission sources at a confidential high technology electronics manufacturing facility
  - Evaluation of a sludge dewatering process at Unocal's Wilmington, California, Refinery
  - United Airlines blade repair facility at the San Francisco Airport
  - Relocation of Kerr-McGee's rocket fuel storage and blending facility to Apex, Nevada.
- # Prepared source testing plans, Quality Assurance/Quality Control (QA/QC), and testing oversight for several facilities including:
  - QA/QC for RCRA air emissions sampling plan for the Department of Defense's Chem-Demil facility on Johnston Atoll
  - Prepared plan and provided QA/QC and field oversight for emissions testing at Baxter Healthcare in Irvine, California
  - Prepared plan and provided testing oversight for Kerr-McGee's existing ammonium perchlorate manufacturing facility in Henderson, Nevada.
- # Completed identification of air permitting regulations and control technology requirements for a proposed 30,000 barrel per day catalytic cracking unit for Coastal Corporation's Pacific Refinery, located in Hercules, California.
- # 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.
- # Assisted in selection and design of air pollution control equipment for various clients.
- # Prepared environmental reports, including waste stream quantification and characterization for several proposed facilities, including:
  - Lake Minerals proposed soda ash plant at Owens Lake, California
  - Minsal's proposed potash facility located on the Salar de Atacama in Chile.

**San Joaquin County Air Pollution Control District**

**During 1987 and 1988**

Mr. Walters served as an air pollution engineer and was responsible for the following: start-up site inspections of air pollution sources; monitoring source tests and evaluating source test reports; permitting minor and major sources of air pollutants; processing emission banking applications; and aiding in the preparation of the District's Best Available Control Technology (BACT) quarterly reports, Reasonable Further Progress reports, and emission inventories.

**Adelphi Center for Energy Studies**

**1985 to 1986**

Mr. Walters served as a combustion facility manager/research engineer and was responsible for the following: management and implementation of all conventional and novel fuel combustion projects, including the preparation of interim and final reports, conducting source tests using EPA methods 1-4 and 17, and the data analysis of all combustion tests; maintenance and repair of all combustion facility equipment; preparation of all combustion project proposals; and implementation and data analysis of fuel atomization studies, fuel rheology research, and bench scale coal ash removal research.

WILLIAM WALTERS, page 6

**CERTIFICATIONS**

Chemical Engineer, California License 5973  
CARB, Fundamentals of Enforcement Seminar  
EPA Methods 1-8, 17; Training Seminar

**PAPERS**

**Authored**

"Current and Future Air Pollution Emission Offset Requirements, and Impacts to the Pacific Northwest".  
PNWIS/CPANS Air and Waste Management Chapters Annual Meeting. November 17, 1995.

**Co-Authored**

"Gas Co-Firing of the CWF for Package Boiler Applications", Presented at the Third Annual Pittsburgh  
Coal Conference, September 1986.

"Implications of Slurry Fuel Rheology on Atomization," American Society of Engineers.

"Factors Affecting Atomization of CWF", Presented at the Eighth International Symposium of Coal  
Slurry Fuel Preparation and Utilization. Orlando, FL May 1986.

1

**DECLARATION OF**  
**Lisa A. Blewitt**

I, **Lisa Blewitt**, declare as follows:

1. I am presently employed by Aspen Environmental Group, a contractor to the California Energy Commission, in the Agoura Hills office as an 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 helped prepare the staff testimony on **AIR QUALITY**, for the **CITY OF RIVERSIDE PUBLIC UTILITIES RIVERSIDE ENERGY RESOURCE CENTER 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: June 29, 2004 Signed:   
At: Agoura Hills, California

**LISA A. BLEWITT**  
**Associate Engineer/Physical Scientist**

**ACADEMIC BACKGROUND**

B.S., Chemical Engineering, University of California, Santa Barbara, 1996

**PROFESSIONAL EXPERIENCE**

Miss Blewitt is a chemical engineer with experience in air, plume and noise analysis. Prior experience includes refinery and power plant design. Project management experience includes helping manage the Aspen team (Aspen employees plus all subcontractors) for several California Energy Commission (CEC) projects, and support on various proposals.

**Aspen Environmental Group**

**August 2001 to present**

Miss Blewitt's project experience at Aspen includes the following:

**California Energy Commission (CEC):** Miss Blewitt performed plume analysis and/or air quality analysis on several projects to support the Staff Assessments for the CEC's CEQA equivalent review process. She helps manage the Aspen team as Power Plant Coordinator (PPC). Coordination of the Aspen team with CEC project managers includes providing up-to-date information to all members of the team, identifying key issues, and preparing monthly progress reports. She also manages the Aspen team as the overall Aspen PPC for all CEC projects by providing weekly progress reports to all Aspen PPC's .

- **Avenal:** AFC for 600 MW combined cycle plant located in Avenal, Kings County. Miss Blewitt performed the plume analysis for the cooling tower, heat recovery steam generators (HRSGs), and auxiliary boiler.
- **Blythe 2:** Aspen Team Power Plant Coordinator to support the Staff Assessment of the AFC for a 520 MW combined cycle power plant located entirely within the previously approved Blythe Energy Project facility boundaries west of the City of Blythe, Riverside County. Miss Blewitt will be performing the plume analysis. She also performed a cooling tower plume ground level fogging analysis to determine impacts to surrounding roadways.
- **Central Valley Energy Center:** Aspen Team Power Plant Coordinator to support the Staff Assessment of the AFC for a 1,060 MW combined cycle power generation facility located in the City of San Joaquin, Fresno County. Miss Blewitt assisted with the air quality analysis, and performed the plume analysis for the cooling tower, HRSGs, and auxiliary boiler. She also performed a cooling tower plume ground level fogging analysis to determine impacts to surrounding roadways.
- **Colusa CC:** AFC for a 500 MW combined cycle power generation facility located west of the City of Williams in Colusa County. Miss Blewitt assisted with the air quality analysis.
- **East Altamont:** AFC for a 1,100 MW combined cycle power generation facility located southeast of Tracy in Alameda County. Miss Blewitt assisted with the cooling tower plume analysis. She also performed a cooling tower plume ground level fogging analysis to determine impacts to surrounding roadways.

- **Henrietta:** AFC for a 91.4 MW simple cycle power plant to be located west of the City of Lemoore, in Kings County. Miss Blewitt assisted with the air quality analysis and performed the plume analysis for the HRSGs. This plant did not require a cooling tower.
- **Inland Empire:** AFC for a 670 MW combined cycle power plant to be located near the town of Romoland and Perris, within an unincorporated area of Riverside County. Miss Blewitt performed the plume analysis for the cooling tower, HRSGs, and auxiliary boiler.
- **Los Esteros Critical Energy Facility:** Aspen Team Power Plant Coordinator to support the Staff Assessment of the AFC for a 180 MW simple cycle peaking plant in San Jose, CA.
- **Magnolia:** AFC to add 250 MW of new generation at Magnolia Generation Power Plant in Burbank, CA. Miss Blewitt assisted in the air quality analysis and performed the plume analysis for the cooling tower and HRSGs. She also performed a cooling tower plume ground level fogging analysis to determine impacts to surrounding roadways.
- **Roseville Energy Facility:** AFC for 900 MW combined cycle power plant five miles northwest of downtown Roseville in Placer County. Miss Blewitt performed the plume analysis for the cooling towers.
- **SMUD Consumnes:** AFC for 1000 MW combined cycle power plant to be located at the Rancho Seco Nuclear Power Plant in Sacramento County. Miss Blewitt performed the plume analysis for the cooling towers and HRSGs.
- **South Star:** AFC for 100 MW simple cycle power plant (SS I) located in the Texaco South Midway-Sunset Oilfield, Kern County. Miss Blewitt assisted with the air quality analysis. Project cancelled.
- **Spartan:** Power Plant Coordinator for Aspen team to support the Staff Assessment of the AFC for a 96 MW simple cycle peaking plant in San Jose, CA. Project cancelled.
- **Tracy:** Aspen Team Power Plant Coordinator to support the Staff Assessment of the AFC for a 169 MW simple cycle power plant to be located southwest of the City of Tracy, in western San Joaquin County. Miss Blewitt also assisted with the air quality analysis and performed the plume analysis based on results from Spartan I Energy Center Project.
- **Vernon:** AFC for the Malburg Generating Station (MGS), a 120 MW combined cycle power plant to be located in the City of Vernon, Los Angeles County. Miss Blewitt performed the plume analysis for the cooling tower and HRSGs. She also performed a cooling tower plume ground level fogging analysis to determine impacts to surrounding roadways.

**Los Angeles Unified School District (LAUSD):** Miss Blewitt performed noise analysis and/or parking studies for the following projects.

- **Wonderland:** Three-story stick building classroom addition to an existing elementary school. Miss Blewitt attended a site visit to analyze the current project alternative, and provided an update to the project manager regarding the impact to issues previously identified for the original configuration. Miss Blewitt performed the noise analysis for the proposed project in October 2002.
- **Narbonne:** Portable additions to an existing high school. Miss Blewitt performed a parking study to determine baseline parking conditions prior to addition of new portables.
- **Wilson:** Portable additions to an existing high school. Miss Blewitt performed a parking study to determine baseline parking conditions prior to addition of new portables.

- **Reseda:** Portable additions to an existing high school. Miss Blewitt performed a noise analysis in October 2002 to determine the significance of noise impacts due to the addition of fifteen classroom buildings and two sanitary buildings on the existing school campus. Coordinated with staff to incorporate all District comments into the Initial Study, and prepared the draft Mitigated Negative Declaration.

**Proposals:** Miss Blewitt assisted in the development of the following proposals:

- **Department of Water and Power On-Call:** Miss Blewitt coordinated the subcontractors including collecting all resumes, project descriptions, firm descriptions, and references.
- **Miguel Mission:** Miss Blewitt coordinated the subcontractors including collecting all letters of participation, conflict of interest statements, disclosure tables, resumes, project descriptions, technical approaches, and references.

**Fluor Daniel, Inc.**

**August 1996 to July 2001**

Miss Blewitt was a Process Engineer at Fluor Daniel, Inc. in Aliso Viejo, CA from August 1996 to July 2001. She did process design work for both refineries and power plants.

- **Occidental Chemical Taft Cogeneration Project:** Worked with Duke Fluor Daniel to independently develop the design of multiple process systems including wastewater treatment, storm water, potable water, hydrogen and natural gas. Coordinated and discussed design issues with civil/structural, architectural, piping, mechanical, project engineers and the client to develop and optimized, cost-effective design. Developed process flow diagrams (PFD) and piping and instrument diagrams (P&ID) to meet all safety and operability requirements set by the client and industry standards. Confirmed piping layouts met system hydraulic requirements for proper operation considering design and alternate operating cases.
- **Georgia-Pacific Steam Reformer Project:** Lead flue gas recycle study to determine operating requirements for combustion in pulse heaters.
- **Syncrude Canada Upgrader Expansion (UE-1) Project:** Prepared the Design Basis Specification and defined the revamp modifications required to debottleneck a Naphtha Hydrotreater Plant. Conducted the PFD Review for design approval with the client in Fort McMurray, Alberta, Canada. Simulated the Naphtha Hydrotreater Plant. Completed multiple configuration studies to determine the best configuration for UE-1.

**ADDITIONAL TRAINING AND COURSES:**

Engineer-In-Training Certificate

UCSB Extension 2-day class - Preparing CEQA/NEPA Documents

UCSB Extension Project Management Professional Certification Program (9/02 - 06/03) – 16 units total

**PROFESSIONAL AFFILIATIONS:** UCSB Alumni Association

## DECLARATION OF

Melinda Dorin

I, Melinda Dorin declare as follows:

I am presently employed by the California Energy Commission in the Environmental Office of the Systems Assessments and Facilities Siting Division as a Planner II.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I prepared the staff testimony on Biological Resources for the Riverside Energy Resource Center 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.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

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: 2 of July, 2004 Signed: Melinda Dorin

At: Sacramento, California

## RESUME OF

MELINDA DORIN

Biologist

### PROFESSIONAL EXPERIENCE

#### **California Energy Commission, Sacramento**

##### **November 2003-Present, Planner II Energy Facility Siting**

##### **June 2001 – November 2003, Planner I Energy Facility Siting**

Provide technical analyses of proposed energy-related projects on biological resources. Duties include the analysis of impacts, identification of mitigation measures and compliance monitoring programs, providing written and oral testimony, and coordinating with other agencies. Knowledge of applicable laws, and species taxonomy and life history for species that occur throughout the state. A member of the mohave ground squirrel technical advisory group. Work as part of team on reports and special projects that are mandated by the state legislature.

#### **State Water Resources Control Board, Sacramento**

##### **April 1999 – June 2001, Environmental Specialist I Bay Delta Water Rights**

Attended Interagency Ecological Program Meetings as a representative of the SWRCB. Conducted CEQA review for applicants requesting changes to or new water rights. Conducted watershed analyses and determined impacts to downstream users. Worked as the biologist on multidisciplinary hearing teams and was responsible for addressing impacts to biological resources in SWRCB decisions. Acted as the SWRCB representative for an Interagency Working Group addressing monitoring requirements in SWRCB Decision 1641, for the Sacramento and San Joaquin Delta. Received a service award for working as part of the Delta Wetlands EIR development team.

#### **California Department of Fish and Game, Bay-Delta Branch, Stockton**

##### **Fish and Wildlife Scientific Aide, October 1997 – April 1999**

Work on Department projects for the Special Water Projects Planning Unit. Implemented a study program in the Suisun Marsh mandated by the Suisun Marsh Plan of Protection. Represented the CDFG at interagency meetings, acted as the lead person and coordinator for the CDFG, and developed interagency work plans and protocols for surveying endangered species such as the salt marsh harvest mouse and the clapper rail in the Suisun Marsh. Wrote annual monitoring reports required by permits. Assisted in conducting surveys at Los Banos Grandes consisting of spotlighting, and trapping for San Joaquin kit fox, mist netting for bats and surveying for the California red-legged frog. Collected samples for selenium testing at the San Luis Drain Agricultural Evaporation Ponds. Field crew lead for the Suisun Marsh Fish Screen Diversion Project, assisted in setting fyke nets and collecting data. Electroshocked for steelhead and coho salmon in the Pescadero watershed.

#### **United States Fish and Wildlife Service, Sacramento-San Joaquin Field Office**

##### **Biological Science Technician, October 1995 – October 1997**

Assisted as part of the field crew and part time crew lead on the Salmonid monitoring program assessing populations and juvenile migration through the Sacramento-San Joaquin Delta. Conducted project sampling utilizing paired and midwater trawls, beach seines, and rotary screw traps, extracted coded-wire tags. Responsible for data

validation, summary reports, database files and summarizing results. Received a service award for taking on and completing extra work duties.

**September 1994- May 1995**

Research Assistant- Collected and analyzed data for a yellow-naped parrot (*Amazona auropaliata*) radio telemetry study. Used mist nests, and other methods to catch birds and collared with radio transmitters. Developed and conducted a vocalization playback study to determine vocal recognition. Co-authored a paper on the results.

**VOLUNTEER**

Conduct Swainson's hawk nest surveys and assist in banding adults and young since 1999. Traveled to Northern Mexico to follow migration route and track wintering birds.

**EDUCATION**

University of California, San Diego  
B.S. Ecology, Behavior and Evolution, June 1994

**ADDITIONAL CLASSES AND WORKSHOPS**

- CEQA Workshop, U.C. Davis Extension, September 2003
- Blunt Nosed Leopard Lizard Identification Workshop, The Wildlife Society, San Joaquin Chapter, April 2003
- Annual Surveying, Monitoring and Handling Workshop for Desert Tortoise, The Desert Tortoise Council, November 2002
- California Red -Legged Frog Workshop, The Wildlife Society, Sacramento Shasta Chapter, April 2002
- Wetland Delineation, Sacramento 2001, The Wetland Training Institute

**PROFESSIONAL AFFILIATIONS**

California Interagency Wildlife Task Group  
Mohave Ground Squirrel Technical Advisory Group  
Desert Tortoise Council  
Society for Conservation Biology  
The Wildlife Society  
The Wildlife Society Sacramento-Shasta Chapter; Past President 2004;  
President 2003,  
Programs Chair 2001-2002

## DECLARATION OF

Dorothy Torres

I, Dorothy Torres declare as follows:

I am presently employed by the California Energy Commission in the Environmental Office of the Systems Assessments and Facilities Siting Division as a Planner II.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I prepared the draft initial study on Cultural Resources for the Riverside Energy Resources Center 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.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

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: 7/2/04

Signed: Dorothy E. Torres

At: Sacramento, California

**Dorothy E. Torres**

**EXPERIENCE:**

September 2002-  
Present

**Planner II:** Cultural, Socioeconomic and Visual Unit, Systems Assessment and Facilities Division, California Energy Commission. Duties: As a Planner II, I identify, describe, and analyze complex cultural resources issues related to electrical energy production facilities, alternative energy technologies, energy research and development and Commission programs. This includes the preparation of sections of initial studies, environmental impact reports and Commission reports.

In addition, I prepare independent assessments of the cultural resources aspects of Notices of Intention, Applications for Certification, and Small Power Plant Exemptions. The final analyses include the preparation and presentation of expert technical testimony, which is presented at Commission hearings.

I also coordinate and work with federal, state, regional and local governments; cultural resources related agencies; environmental organization and universities; Native American or other ethnic groups; archaeological or historical professional organizations; and members of the general public regarding energy-related issues to assure their input into the Commission power plant siting process and other Commission programs.

Moreover, I lead or participate in workshops and meetings concerning Commission projects, programs and policies, amongst and between project applicants, staff, other governmental agencies, private organizations, and the public.

In addition, I examine and evaluate existing and proposed laws, ordinances, regulations, standards, and policies pertinent to the visual, cultural aspects of proposed energy facilities on Commission programs. After permitting, I evaluate the licensee's compliance with conditions of certification for power plant facilities.

April 2001-  
August 2002

**Planner I:** Cultural, Socioeconomic and Visual Unit,

Systems Assessment and Facilities Division, California Energy Commission. Duties: I gather, organize and analyze cultural resources data and identify issues, impacts and mitigation measures ensuring compliance with the California Environmental Quality Act. I provide oversight for consultants working on siting applications in the area of cultural resources. I participate in workshops and meetings concerning Energy Commission projects and programs. In addition, I interact with Division technical staff and staff representing other Divisions, local and regional government staff/decision makers, federal and state agency representatives and consultants/experts in the areas of anthropology, archaeology, history and related fields. I prepare written assessments of energy related documents.

December 1998-  
March 2001

**Energy Analyst:** Community and Cultural Resources Unit, Energy Facilities Siting and Environmental Protection Division, California Energy Commission. Duties: I assist in gathering, organizing and analyzing cultural resources data and identify issues, impacts and mitigation measures. I assist in coordinating with local governments, resource protection agencies, environmental organizations and business organizations. Furthermore, I participate in workshops and meetings concerning Energy Commission projects and programs. I evaluate existing and proposed laws, ordinances, regulations, standards, and policies pertinent to the cultural resource aspect of proposed energy facilities. I prepare written assessments of energy related documents.

**EDUCATION:**

Spring 1988	M.A., Anthropology California State University, Sacramento
Spring 1980	B.A., Anthropology and History California State University, Sacramento
Professional Organizations	Society for California Archaeology Sacramento Archaeological Society

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**DECLARATION OF  
KEVIN ROBINSON**

I, Kevin Robinson declare as follows:

I am presently employed by the California Energy Commission in the Engineering Office of the Systems Assessments and Facilities Siting Division as a Mechanical Engineer.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I helped prepare the staff testimony on Energy Resources for the Riverside Energy Resource Center 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.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

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: 6-29-04 Signed: Kevin Robinson

At: Sacramento, California

**KEVIN ROBINSON**  
Mechanical Engineer

**Experience Summary**

Four years experience in the electric generation field, including mechanical design, QA/QC and construction of hydroelectric plant systems; and engineering and policy analysis of geothermal, natural gas-fired and thermal power plant regulatory issues.

**Education**

- California State University, Chico—Bachelor of Science, Mechanical Engineering
- Certified EIT, California

**Professional Experience**

**2001 to Present**—Mechanical Engineer, Systems Assessment & Facility Siting Division, Engineering Section – California Energy Commission

Responsible for analysis of generating capacity, reliability, efficiency, and the mechanical, civil/structural engineering aspects of power plant siting cases.

**2000 to 2001**—Mechanical Engineer, Oroville Field Division, Engineering Section – California Department of Water Resources

Assist in the preparation of designs, technical specifications and cost estimates for mechanical equipment at a hydroelectric power plant. Coordinate the design, installation, and inspection of mechanical equipment. Assist in preparing test reports, and recommendations for corrective action.

**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 Systems Assessment and Facilities Siting 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 supervised the preparation of the staff testimony on **Energy Resources** and **Noise and Vibration** for the Riverside Energy Resource Center 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 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: 7/21/04 Signed: 

At: Sacramento, California

**STEVE BAKER, P.E.**  
Senior Mechanical Engineer

**Experience Summary**

Thirty 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, Siting & Environmental Division - California Energy Commission

Technical lead person for the analysis of generating capacity, reliability, efficiency, noise, 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.

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**DECLARATION OF  
Dal Hunter, Ph.D., C.E.G.**

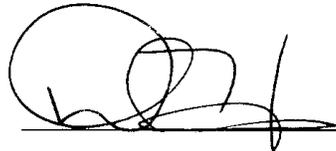
I, **Dal Hunter, Ph.D., C.E.G.**, declare as follows:

1. I am presently employed by Black Eagle Consulting as Vice President under contract with 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 **GEOLOGY AND PALEONTOLOGY** for the **Riverside Energy Resource Center (04-SPPE-1)**, 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 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.

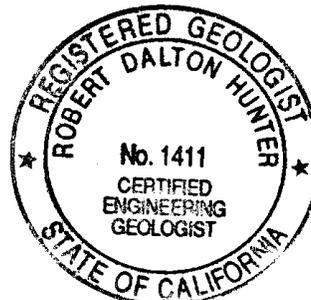
I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: June 29, 2004

Signed:



At: Black Eagle Consulting, Inc.  
Reno, Nevada



exp. 3-31-05

# **Robert D. Hunter, Ph.D., C.E.G.**

## **Engineering Geologist**

### **Vice President**

#### **Education**

- Ph.D. – Geology – 1989 – University of Nevada, Reno
- M.S. – Geology – 1976 – University of California - Riverside
- B.S. – Geology – 1972 – California State University, Fullerton

#### **Registrations**

- Professional Geological Engineer – Nevada
- Registered Geologist – California
- Certified Engineering Geologist – California

#### **Experience**

1997 to Present: Black Eagle Consulting, Inc.; Vice President. Dr. Hunter is in charge of all phases of geochemical, geological, and geotechnical projects and is responsible for conducting, coordinating, and supervising geotechnical investigations for public and private sector clients. He is very familiar with design specifications and state and federal requirements.

Dr. Hunter has also provided geological, geotechnical, and paleontological review and written testimony for California Energy Commission (CEC) power plant applications including:

- El Segundo Power Redevelopment Project
- Magnolia Power Project
- Ocotillo Energy Project
- Vernon-Malburg Generating Station
- Inland Empire Energy Center
- Henrietta Peaker Project
- East Altamont Energy Center
- Avenal Energy Center
- Teayawa Energy Center
- Salton Sea Geothermal Power Plant
- Walnut Energy Center
- Riverside Energy Resource Center

1978 to 1997: SEA, Incorporated; Geotechnical Manager, Engineering Geologist. Dr. Hunter was in charge of all phases of geotechnical projects for SEA, including project coordination and supervision, field exploration, geotechnical analysis, slope stability analysis, soil mechanics, engineering

geochemistry, mineral and aggregate evaluations, and report preparation. Numerous investigations were undertaken on military, commercial, industrial, airport, residential, and roadway projects. He worked on many geothermal power plants, providing expertise in foundations design, slope stability, seismic assessment, geothermal hazard evaluation, expansive clay, and settlement problems. Project types included high-rise structures, airports, warehouses, shopping centers, apartments, subdivisions, storage tanks, roadways, mineral and aggregate evaluations, slope stability analyses, and fault studies.

1977 to 1978: Fugro (Ertec) Incorporated Consulting Engineers and Geologists; Staff Engineering Geologist; Long Beach, California.

### **Affiliations**

- Association of Engineering Geologists

### **Publications**

- Hunter, 1988, *Lime Induced Heave in Sulfate Bearing Clay Soils*, Journal of Geotechnical Engineering, ASCE, Vol. 14, No. 2, pp. 150-167.
- Hunter, 1989, *Applications of Stable Isotope Geochemistry in Engineering Geology*: Proceedings of the 25<sup>th</sup> Annual Symposium on Engineering Geology and Geotechnical Engineering.
- Hunter, 1993, *Evaluation of Potential Settlement Problems Related to Salt Dissolution in Foundation Soils*: Proceedings of the 29<sup>th</sup> Annual Symposium on Engineering Geology and Geotechnical Engineering.

## DECLARATION OF

Geoffrey Lesh, P.E.

I, Geoffrey Lesh, declare as follows:

I am presently employed by the California Energy Commission in the Engineering Office of the Systems Assessments and Facilities Siting Division as a Mechanical Engineer.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I helped prepare the Hazardous Materials Section on June 30, 2004 for the Riverside Energy Resource Center 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.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

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: \_\_\_\_\_

June 30, 2004

Signed: \_\_\_\_\_



At: \_\_\_\_\_

Sacramento, California

**Geoffrey Lesh, P.E.**  
**Mechanical Engineer**

**WORK HISTORY**

California Energy Commission Mechanical Engineer 2002 - Current  
• Review and analyze applicants' plans for safe management of hazardous materials, and for protecting worker safety.

Self-Employed Independent Investor 2000 - 2002  
• Wrote market analysis computer software and traded personal account.

Read-Rite Corp Wafer Engineering Manager 1994 - 2000  
• Designed and developed wafer manufacturing processes for computer data storage systems. Managed team of engineers and technicians responsible for developing wet and dry chemical processes for manufacturing, including process and safety documentation.  
• Managed process and equipment selection for manufacturing processes.  
• Processes included vacuum processed metals and ceramics, grinding-polishing, plating, etching, encapsulation, process troubleshooting, and SPC reporting.

Dastek Corp (Komag Joint Venture Start-up) Wafer Engineering Manager 1992 - 1994  
• Developed wafer processes for new technology recording head for hard disk drives.  
• Managed team of engineers and technicians.  
• This position included start-up of wafer fab, including line layout, purchase, installation, and startup of new process equipment, etc.

Komag, Inc Alloy Development Manager 1989 - 1992  
• Developed new vacuum-deposited recording alloys  
• Responsible for planning and carrying-out tests, designing experiments, analyzing results, managing test lab conducting materials characterizations.  
• Extensive process modeling and data analysis.

Verbatim Corp (Kodak) Process Development Manager 1983 - 1989  
• Mechanical engineering for computer disk manufacturing, including product, process, and equipment including metal-ceramic-plastic processes for optical disk development.  
• Production processes included plating, metal evaporation, reactive sputtering, laser-based photolithography, injection molding.  
• Steering Committee Member, *Center for Magnetic Recording Research, UC San Diego*

IBM Corp Mechanical/Process Engineer 1977 - 1983  
• Product development for photocopiers and computer tape-storage systems.

**EDUCATION**

Stanford University, Master of Science Degree	Materials Science and Engineering
UC-Berkeley, Bachelor of Science Degree (Double Major)	Mechanical Engineering, Materials Science and Engineering
University of Santa Clara, Graduate Certificate	Magnetic Recording Engineering
Registered Professional Engineer, California	Mechanical #M32576 Metallurgical #MT1940

**DECLARATION OF  
Amanda Stennick**

I, **Amanda Stennick** declare as follows:

1. I am presently employed by The California Energy Commission in the **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 **Land Use** 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: July 7, 2004 Signed: Amanda Stennick  
At: Sacramento, CA

# AMANDA STENNICK

## EDUCATION

B.A. 1986 University of California, Davis, Urban and Economic Geography

## WORK EXPERIENCE

Oct. 1993 **Planner I.** California Energy Commission, Energy Facilities Siting and  
to April 1998 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 suitable mitigation measures, preparation of testimony, and project monitoring to ensure compliance with local, state and federal environmental laws and regulations. Recent work includes participation in the environmental justice task force, and 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; ongoing demographic research for environmental justice issues in siting cases.

April 1998 **Planner II.** California Energy Commission, Energy Facilities Siting and  
present 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 suitable mitigation measures, preparation of testimony, and project monitoring to ensure compliance with local, state and federal environmental laws and regulations. Recent work includes participation in the environmental justice task force, and 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; ongoing demographic research for environmental justice issues in siting cases.

1992 **Environmental Analyst/Planner.** Beak Consultants.  
to 1993

Environmental Planner for EIR/EA for the Mammoth County Water District, involving the analyses of potential impacts resulting from lake water transfers and maintenance of instream flows in the Mammoth Lakes Basin. Prepared land use, socioeconomic, recreation, and public services and utilities sections of EIR/EA.

Environmental Planner for an Effluent Treatment Plant EIR for Simpson Paper company. Prepared land use, socioeconomic, recreation, public services and utilities, cumulative impacts sections, and mitigation monitoring.

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; compliance with federal, state, and local plans and policies.

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 a Specific Plan for 80-acre Mixed Use/Water Related development; and 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; 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 as 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.

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. Coordinate work efforts with the CEC, SMUD, and PG&E to develop environmental and siting policies for energy facilities and transmission lines; identify environmental impacts and appropriate mitigation measures.

1987  
to 1989

**Planner/Assistant Planner.** Yolo County Community Development

Planning liaison for Homestake Mining Company's (HMC) McLaughlin Mine. Conducted meetings on the Technical Review Panel's environmental monitoring of HMC's McLaughlin Mine, and prepared staff reports on the implementation of use permit phasing, regarding issues of water quality, and impacts of the tailings pond on biologic resources. Specific tasks included site visits to monitor the revegetation plan and other mitigation measures as specified in the use permit; oral and written presentations 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)

#### **PROFESSIONAL AFFILIATIONS**

Association of Environmental Professionals  
American Planning Association

1

**DECLARATION OF  
Shahab Khoshmashrab**

I, **Shahab Khoshmashrab** declare as follows:

1. I am presently employed by the California Energy Commission in the **Engineering Office** of the Systems Assessment and Facility 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 **Noise and Vibration**, for the **Riverside Energy Resource Center 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 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: June 30, 2004 signed: 

At: Sacramento, California

**Shahab Khoshmashrab**  
Mechanical Engineer

**Experience Summary**

Nine years experience in the Mechanical, Civil, Structural, and Manufacturing Engineering fields involving engineering and manufacturing of various mechanical components and building structures. This experience includes QA/QC, construction/licensing of electric generating power plants, and engineering and policy analysis of thermal power plant regulatory issues.

**Education**

- California State University, Sacramento-- Bachelor of Science, Mechanical Engineering

**Professional Experience**

**2001-2004**--Mechanical Engineer, Systems Assessment and Facilities Siting-- California Energy Commission

Performed analysis of generating capacity, reliability, efficiency, noise and vibration, and the mechanical, civil/structural and geotechnical engineering aspects of power plant siting cases.

**1998-2001**--Structural Engineer -- Rankin & Rankin

Engineered concrete foundations, structural steel and sheet metal of various building structures including energy related structures such as fuel islands. Performed energy analysis/calculations of such structures and produced structural engineering detail drawings.

**1995-1998**--Manufacturing Engineer -- Carpenter Advanced Technologies

Managed manufacturing projects of various mechanical components used in high tech medical and engineering equipment. Directed fabrication and inspection of first articles. Wrote and implemented QA/QC procedures and occupational safety procedures. Conducted developmental research of the most advanced manufacturing machines and processes including writing of formal reports. Developed project cost analysis. Developed/improved manufacturing processes.

1

## DECLARATION OF

Dr. Obed Odoemelam

I, Obed Odoemelam declare as follows:

I am presently employed by the California Energy Commission in the **Environmental Protection Office** of the Systems Assessments and Facilities Siting Division as a **Staff Toxicologist**.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I helped prepare the staff testimony on **Public Health** for the **Riverside Energy Resource Center** 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.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

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: July 7, 2004 Signed: Odoemelam

At: Sacramento, California

## DECLARATION OF

Dr. Obed Odoemelam

I, Obed Odoemelam declare as follows:

I am presently employed by the California Energy Commission in the **Environmental Protection Office** of the Systems Assessments and Facilities Siting Division as a **Staff Toxicologist**.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I helped prepare the staff testimony on **Transmission Line Safety and Nuisance** for the **Riverside Energy Resource Center** 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.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

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: July 7, 2004 Signed: Odoemelam

At: Sacramento, California

1

**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.

1

**DECLARATION OF**

Joseph Diamond, Ph. D.

I, Joseph Diamond, Ph. D. declare as follows:

I am presently employed by the California Energy Commission as a Planner II-Economist.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I helped prepare the socioeconomics testimony on 06-30-04 for the Riverside Energy Resource Center 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.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

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: 06-30-04 Signed: Dr. Joseph Diamond

At: Sacramento, California



Dr. Joseph Diamond  
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

1

## DECLARATION OF DAVID FLORES

I, **David Flores** declare as follows:

1. I am presently employed by the California Energy Commission in the **Land Use and Traffic and Transportation Unit** of the Office of the Systems Assessments and 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 **Traffic and Transportation**, for the **Riverside Energy Resource Center 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: July 6, 2004

Signed: \_\_\_\_\_

At: Sacramento, California

## DAVID FLORES

### WORK EXPERIENCE

Sept. 1998  
to Present

**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, visual and traffic and transportation resources. Specific tasks include the analysis of potential impacts, identification of suitable mitigation measures, preparation of testimony, and project monitoring to ensure compliance with local, state and federal environmental laws and regulations.

March 29, 1988

to September 12, 1998 **Senior Planner.** County of Yolo Planning and Public Works Department

Senior Planner - Current and Advanced Planning (Resources Management and Planning)

Present responsibilities include the following:

Administer the establishment of Planning schedules and timeframe completion schedules; Administration and staff support to Planning Commission and Board of Supervisors; Staff support and liaison to citizen's committees. Preparation of Environmental documents (Negative Declarations, preparation of Environmental Impact Reports and Categorical Exemptions) in accordance with State and Federal Regulations.

### PLANNING ACHIEVEMENTS

- ~ Principal staff involved in development of the County Right to Farm and Williamson Act/ Blue Ribbon Ordinances.
- ~ Staff liaison to citizen committees for the communities of Yolo County
- ~ Substantial experience in working successfully with community organizations and committees on controversial projects.
- ~ Responsible for the administration of the California Environmental Quality Act (CEQA) for all matters going before the Planning Commission and Board of Supervisors.

### EDUCATION

California State University @ Sacramento  
University of California @ Davis  
Major: Environmental Studies  
Minor: Business Administration

Continuing education has included: Writing for Managers, CEQA Updates, Managing the Office, CEQA Update, Subdivision Map Act, General Plan Update

## **DECLARATION OF**

Sudath Arachchige

I, Sudath Arachchige declare as follows:

I am presently employed by the California Energy Commission in the Engineering Office of the Systems Assessments and Facilities Siting Division as an Associate Electrical Engineer.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I helped prepare the staff testimony on Transmission System Engineering for the Riverside Energy Resource Center 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.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

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.

Date: June 29, 2004. Signed: Sudath Arachchige

At: Sacramento, California

**Sudath Arachchige**  
**12655 King Fisher Drive**  
**Grand Terrace CA 92313-USA**

**Phone 916-630-1187**

**EDUCATION:**

Bachelor of Science in Electrical Engineering at California State University Fullerton

**ATTAINMENTS:**

Member of the Professional Engineers in California Government  
Vice President Electrical Engineering Society-California State University Fullerton.

**EXPERIENCE:**

**November-2001 to Present:** - Associate Electrical Engineer, System Assessment and Facilities Siting Division, California Energy Commission.

Conduct and perform planning studies and contingency analysis including power flow, short-circuit, stability, and post-transient analysis to maintain reliable operation of the power system. Investigates and analyzes Grid Planning problems and provides appropriate information to Grid Planning Engineers. Develops automated computer programs and other advance analysis methods for comprehensive evaluation of the operational performance of the transmission system.

Understanding of regulatory and reliability guidelines, WECC and NERC planning and operation criteria, CPUC and FERC requirements. Review technical analyses for WECC/ISO/PTO transmission systems and proposed system additions; provide support and analyses associated with Reliability Must-Run (RMR) contracts and the Local Area Reliability Services (LARS) process; review new generation interconnection studies; provide congestion analyses; and provide support for regulatory filings.

**June-1998 to November-2001:** - Project Electrical Engineer, Design Electrical Engineering Section, Department of Transportation, California.

Electrical Engineering knowledge and skills in the design, construction and maintenance of California state work projects involving all the public work areas; contract administration, construction management, plan checking, field engineering and provide liaison with consultants, developers, and contractors. Plan review in facility constructions, highway lighting, sign lighting, rest area lighting, preparation of project reports, cooperative agreements, review plans for compliance of construction and design guide lines for national electrical code, standards and ordinance. Review process included breaker relay coordination, detail wiring diagrams, layout details, service coordination, load, conductor sizes, derated ampacity, voltage drop calculations, harmonic and flicker determination.

**June-1993 to May-1998:-** Substation Electrical Engineer, City of Anaheim, California.

Performed protective relay system application, design and setting determination in Transmission & Distribution Substation. Understanding of principles of selective

## DECLARATION OF

D. Bucaneg, Jr. -PE

I, Demetrio Bucaneg, Jr. declare as follows:

1. I am presently employed by the California Energy Commission in the Transmission System Engineering, Engineering Office of the Energy Facilities Siting 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 Al McCuen and Sudath Arachchige prepare the staff testimony on Transmission System Engineering, for the Riverside Energy Resource Center Project based on my independent analysis of the application for Small Power Plant Exemption and supplement 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: June 30, 2004

Signed: /sgd/Demetrio S. Bucaneg, Jr.

At: Sacramento, California

Demetrio S. Bucaneg, Jr. –PE, C10, MBA  
1516 Ninth Street, Sacramento, CA 95814  
Work Phone: (916) 654-4723      Email: dbucaneg@energy.state.ca.us

#### EDUCATION, LICENSES, AND REGISTRATION

Executive MBA – University of Phoenix  
Registered Professional Electrical Engineer - State of California  
Registered General Electrical C10 Contractor - State of California  
BSEE Accreditation - California State University, Sacramento, CA  
BSEE - St. Louis University, The Philippines

#### TECHNICAL TRAININGS

Power Systems Analysis	Power Systems Grounding
Advanced Power Systems Analysis	Power Quality Analysis
Basic Protective Relaying	Applied Protective Relaying
Symmetrical Components	Transmission & Substation Design
Dissolved Gas in Oil Analysis	PLS CADD Software Application
MS Project Management	PSS/E Load Flow & Stability Softwares
Aspen One-Liner, Load Flow & Line Constant	Noise Mitigation in Communication Systems
Substation Reliability Centered Maintenance	EMTP Software Application
SEL Relaying Application	Basler Protective Relaying & Excitation
Electrical Safety	AVO Relay Test & Calibration
IEEE Power System Fault Calculations	EPRI Interconnected Power System Dynamics

#### EMPLOYMENT HISTORY

1. California Energy Commission  
Associate Electrical Engineer –Transmission System Engineering, SA&FSD, June 2002 to present
2. Electrical Construction & Maintenance Company  
Principal Electrical Engineer -Project & Business Development, February 2002 to June 2002
3. Enron Wind Corporation –Renewable Energy Services  
Manager –Global Power Systems Engineering, July 1998 – January 2002
4. California Department of Water Resources  
Associate HEP Utility Engineer, January 1987 – July 1998
5. U.S. Windpower, Inc.  
Senior Electrical Engineer, May 1984 – January 1987
6. National Power Corporation, August 1977 – December 1983 (Positions held)
  - a.) Provincial Superintendent, Nueva Vizcaya-Quirino Sub-Area
  - b.) Principal Engineer –Relay Group, Technical Services North
  - c.) Senior Engineer –Relay Section, Technical Services North
  - d.) Electrical Engineer –Meter Section, Technical Services North
  - e.) Asst. Elect. Engineer –Test & Commissioning Section, Technical Services North
7. Beta Electric Corporation  
Product Engineer, October 1976 – August 1977
8. Power Factors, Inc.  
Projects Coordinator, April 1976 – October 1976

## DECLARATION OF

Al McCuen

I, Al McCuen declare as follows:

I am presently employed by the California Energy Commission in the Engineering Office of the Systems Assessments and Facilities Siting Division as a Senior Electrical Engineer.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I helped prepare the staff testimony on Transmission System Engineering for the Riverside Energy Resource Center 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.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

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.

Date: June 29, 2004. Signed:

A handwritten signature in black ink, appearing to read "Al McCuen", written over a horizontal line.

At: Sacramento, California

Albert A. McCuen

SENIOR ELECTRICAL ENGINEER

Education

A.S., Electronic Engineering, College of the Siskiyous, Weed, CA  
B.S., Electrical Engineering, California State University, CA

Professional Background

1990 to present

Senior Transmission Planner for Regulatory Transmission Engineering, Electrical Engineering, and Transmission System Evaluation. Special consultant for Transmission Safety and Nuisance discipline. Senior Security analyst for electricity assests and coordination with California Antiterrorist Information Center.

1987 to 1989

Supervisor of Transmission Evaluation Unit for Transmission Safety and Nuisance, Electrical Engineering, Transmission Engineering and Transmission System Evaluation technical disciplines.

1978 to 1987

Transmission System Program Specialist/Health and Safety Program Specialist, California Energy Commission (CEC), Siting and Environmental Division.

Expert witness for the Commission's power plant approval process and Commission staff transmission planner. Major assignments in transmission engineering and transmission system planning. Duties emphasize determination of the adequacy, acceptability and relative merit of applicant proposals for major transmission facilities (and staff proposed alternatives) in consideration of economics, reliability, conformance with transmission system planning criteria and coordination\_of regional transmission and generation facilities. Major assignments have also included scoping macro transmission policies for California, Developing Commission transmission system planning regulations and guidelines, developing common forecasting methodology for transmission system planning utility reporting.

1977 - 1978

Manager, Transmission Line Effects Section, CEC, Compliance and Safety Office.

Research, analysis and evaluation of public heath, safety and nuisance concerns for transmission lines. Duties included engineering calculations of transmission line electrical effects, review and assessment of technical publications and health, safety and nuisance standards.

1976 - 1977

Energy Facility Siting Planner, CEC, Compliance and Safety Office

Research and evaluation of existing material and health and safety standards applicable to thermal power plants and transmission lines. Responsible for coordination of expert witness to testify at hearings, preparation of cross examination questions, analysis of impact of effects and preparation of staff summary reports on Notice of Intent(s) and hearing testimony.

1969 - 1976

Electrical Engineering, Private firm - Electrical, Mechanical and Systems Engineering Construction Contractor

Engineering duties and coordination responsibilities for the construction of power plants, switchyards, power lines, industrial buildings and process control systems. Responsible for code and specification interpretation and compliance, design, project cost estimates and installation.

1

## DECLARATION OF

Mark R. Hamblin

I, Mark R. Hamblin declare as follows:

I am presently employed by the California Energy Commission in the Environmental Office of the Systems Assessments and Facilities Siting Division as a Planner II.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I prepared the draft initial study on Visual Resources for the Riverside Energy Resources Center 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.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

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: July 2, 2004 Signed: Mark R. Hamblin  
At: Sacramento, California

## **MARK R. HAMBLIN**

### **EDUCATION**

University of California, Davis Extension. Course work in Urban and Regional Land Use Planning (1988 to 1995).

Cosumnes River College. Course work in Communications Media (1990 to 1991).

California State University, Bakersfield. M.P.A., August, 1988; concentration: Public Policy. Minor degree work: Business Administration and Political Science.

California State University, Sacramento. B.S. Public Administration, May, 1984; Concentration: Human Resources Management.

Porterville College. A.A. Social Science and General Education, May, 1982; course work in Administration of Justice.

### **PROFESSIONAL EXPERIENCE**

California Energy Commission, Systems Assessment and Facilities Siting Division, Sacramento, CA.: Planner II; prepares technical analysis for thermal energy facility siting cases in the areas of land use and traffic & transportation; evaluates federal, state, regional and local LORS (laws, ordinances, regulations, standards) and environmental affects in accordance to the California Environmental Quality Act (CEQA) on siting cases; participates in public workshops on projects; and presents testimony during evidentiary hearings before the Energy Commission on cases; November, 2000 to present.

Yolo County Planning and Public Works Department, Planning Division, Woodland, CA.: Associate Planner; collected and evaluated information in the preparation of written reports pertaining to community and county development (i.e. land use development, environmental assessments, habitat conservation, economic development, etc.) for presentation to the county board of supervisors and/or planning commission; liaison for the board of supervisors and planning commission on county and community development issues and policies; hired and managed consultants on environmental and/or planning projects; performed zoning administrator duties; reviewed and/or prepared environmental assessment documents in accordance to the California Environmental Quality Act & Guidelines (CEQA); advised and assisted the public in the preparation and processing of land use requests; March, 1992 to October, 2000.

Yolo County Community Development Agency, Planning Division, Woodland, CA.:

Assistant Planner; collected and evaluated information in the preparation of written reports pertaining to community and county development (i.e. land use development, environmental assessments, habitat conservation, etc.) for presentation to the county board of supervisors and/or planning commission; liaison for the board of supervisors and planning commission on county and community development issues and policies; hired and managed consultant on environmental and/or planning projects; critiqued and/or prepared environmental assessment documents (i.e. CEQA); advised and assisted the public in the preparation and processing of land-use requests; January, 1991 to March, 1992.

KOVR-13, West Sacramento, CA.: General News Assistant; assisted at the news assignment desk; writing; gathered and researched information for news reports; monitored and contacted news information sources; assisted reporters and/or photographers on assignment; August, 1991 to December, 1991.

KCRA-TV, Sacramento, CA.: ENG Editing/General News Assistant; selected and assembled video images and audio tracks to convey a news report; assisted at the news assignment desk; assisted reporters and/or photographers on assignment; May, 1990 to September, 1990.

Tulare County Planning and Development Department, Visalia, CA.: Planning Technician II; reviewed land division and special-use permit applications for conformity with the county's general plan and compliance with CEQA; presented project requests (land division, special use permits, etc.) at public hearings before the planning commission, site plan review committee and zoning administrator; distributed information and answered inquiries from the public regarding planning and land use development; advised and assisted the public in the preparation and processing of land use requests; March, 1988 to January, 1990.

Tulare County Planning and Building Department, Visalia, CA.: Planning Technician I; reviewed land division and special-use permit applications for conformity with the county's general plan and compliance with the state's environmental laws (i.e. CEQA); presented project requests at public hearings before the site plan review committee or zoning administrator; distributed information and answered questions from the public regarding planning and land use development; advised and assisted the public in the preparation and processing of land use requests; September, 1987 to March, 1988.

State of California, Department of Finance, Sacramento, CA.: Staff Services Analyst in the Public and Intergovernmental Relations Unit; researched and prepared state budget-related correspondence for the budget manager's, director's or governor's review and/or signature; March, 1983 to September, 1984.

## **REFERENCES**

References will be furnished at your request

**DECLARATION OF**  
ELLEN TOWNSEND-HOUGH

I, Ellen Townsend-Hough declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Office of the Systems Assessments and Facilities Siting Division as an Associate 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 Waste Management for the Riverside Energy Resource Center 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: 7/7/4

Signed: 

At: Sacramento, California

# Ellen Townsend-Hough

## SUMMARY

I am a chemical engineer with over 20 years of experience. My professional career has afforded me many unique growth and development opportunities. Working knowledge of the California Environmental Quality Act. Strength in analyzing and performing complex engineering analyses. Also worked as a policy advisor to a decision-maker for three years.

## PROFESSIONAL EXPERIENCE

### Writing

- Write letters, memos, negative declarations, environmental impact reports that require technical evaluation of mechanical engineering and environmental aspects of pollution control systems, environmental impacts, public health issues and worker safety.

### Technical Analysis and Presentation

- Performs mechanical engineering analysis of designs for complex mechanical engineering analysis of designs for systems such as combustion chambers and steam boilers, turbine generators, heat transfer systems, air quality abatement systems, cooling water tower systems, pumps and control systems
- Review and process compliance submittals in accordance with the California Environmental Quality Act, the Warren Alquist Act, the Federal Clean Air Act and the California and Federal Occupational Health and Safety Acts to assure compliance of projects
- Provides licensing recommendations and function as an expert witness in regulatory hearings.
- Provide public health impact analysis to assess the potential for impacts associated with project related air toxic/non-criteria pollutant emissions.
- Evaluate the potential of public exposure to pollutant emissions during routine operation and during incidents due to accidents or control equipment failure
- Provide an engineering analysis examining the likelihood of compliance with the design criteria for power plants and also examine site specific potential significant adverse environmental impacts

### Technical Skills

- Establish mitigation that reduces the potential for human exposure to levels which would not result in significant health impact or health risk in any segment of the exposed population.
- Assist with on-site audits and inspection to assure compliance with Commission decisions.
- Review and evaluate the pollution control technology applied to thermal power plants and other industrial energy conversion technologies.
- Work with the following software applications: WORD, Excel, and PowerPoint.

### Policy Advisor

1 Ellen Townsend-Hough

- Provided policy, administrative and technical advice to the Commissioner Robert Pernel. My work with the Commissioner focused on the policy and environmental issues related to the Commission's power plant licensing, research and development and export programs.
- Track and provide research on varied California Energy Commission (CEC) programs. Prepare analysis of economic, environmental and public health impacts of programs, proposals and other Commission business items.
- Represent Commissioner's position in policy arenas and power plant siting discussions.
- Write and review comments articulating commission positions before other regulatory bodies including Air Resources Board, California Public Utilities Commission, and the Coastal Commission.
- Wrote speeches for the Commissioner's presentations.

### **EMPLOYMENT HISTORY**

2002-Present	Associate Mechanical Engineer	CEC Sacramento CA
1999-2002	Advisor to Commissioner	CEC Sacramento CA
1989-1999	Associate Mechanical Engineer	CEC Sacramento CA
1992-1993	Managing Partner	EnvironNet Sacramento CA
1988-1989	Sales Engineering Representative	Honeywell Inc Commerce CA
1987-1988	Chemical Engineer	Groundwater Technology Torrance CA
1985-1986	Technical Marketing Engineer	Personal Computer Engineers Los Angeles CA
1985-1985	Energy Systems Engineer	Southern California Gas Company Anaheim CA
1980-1985	Design and Cogeneration Engineer	Southern California Edison Rosemead CA
1975-1980	Student Chemical Engineer	Gulf Oil Company Pittsburgh PA

### **EDUCATION**

Bachelor of Science, Chemical Engineering  
Drexel University, Philadelphia Pennsylvania

#### Continuing Education

*Hazardous Material Management Certificate, University California Davis  
Urban Redevelopment and Environmental Law, University of California Berkley  
Analytical Skills, California Department of Personnel Administration (DPA) Training Center  
Legislative Process/Bill Analysis, DPA Training Center  
Federally Certified Environmental Justice Trainer*

***References furnished upon request.***

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE  
STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION  
FOR THE RIVERSIDE ENERGY  
RESOURCE CENTER PROJECT

Docket No. 04-SPPE-01  
PROOF OF SERVICE

*\*Revised 6/9/04*

I, Angela Hockaday, declare that on **July 29, 2004**, I deposited copies of the attached **Final Initial Study for the Riverside Energy Resource Center project**, in the United States mail in Sacramento, CA with first class postage thereon fully prepaid and addressed to the following:

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**APPLICANT**

Stephen H. Badgett  
Utilities Assistant Director  
Riverside Public Utilities  
3900 Main Street  
Riverside, CA 92522  
**sbadgett@ci.riverside.ca.us**

Robert B. Gill  
Principal Electrical Engineer  
Riverside Public Utilities  
3900 Main Street  
Riverside, CA 92522  
**rbg@ci.riverside.ca.us**

Dave Tateosian, P.E.  
Project Manager  
Power Engineers, Inc.  
P.O. Box 2037  
Martinez, CA 94553  
**dtateosian@powereng.com**

Kevin L. Lincoln  
Environmental Project Manager  
Power Engineers, Inc.  
3940 Glenbrook Drive, Box 1066  
Hailey, Idaho 83333  
**klincoln@powereng.com**

**\*Allan J. Thompson, Esq.  
Attorney for Applicant  
21 "C" Orinda Way, #314  
Orinda, CA 94563  
allanori@comcast.net**

**INTERVENORS**

California Unions for Reliable Energy  
Marc D. Joseph  
Adams Broadwell Joseph & Cardozo  
651 Gateway Boulevard, Suite 900  
South San Francisco, CA 94080  
**mjoseph@adamsbroadwell.com**

**INTERESTED AGENCIES**

Kate Kramer  
CA Department of Fish and Game  
4775 Bird Farm Road  
Chino Hills, CA 91709

Milasol Gaslan  
Santa Ana Regional Water  
Quality Control Board  
3737 Main Street, Suite 500  
Riverside, CA 92501

John Yee and Ken Coats  
South Coast Air Quality Mgmt. District  
21865 E. Copley Drive  
Diamond Bar, CA 91765-4182

Guenther Moskat, Chief  
Planning and Environmental Analysis Section  
Department of Toxic and Substances  
Control 1001 "I" Street, 22<sup>nd</sup> Floor  
P.O. Box 806  
Sacramento, CA 95812-0806

I declare that under penalty of perjury that the foregoing is true and correct.

  
(Signature)

\* \* \* \*

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