

Draft Initial Study

# El Centro Unit 3 Repower Project

Small Power Plant Exemption (06-SPPE-2)  
Imperial County



**CALIFORNIA  
ENERGY  
COMMISSION**

**DOCKET**  
**06-SPPE-2**

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**STAFF REPORT**

SEPTEMBER 2006  
(06-SPPE-2)  
CEC-700-2006-009-SD



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EL CENTRO UNIT 3 REPOWER (06-SPPE-2)  
DRAFT INITIAL STUDY

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# EXECUTIVE SUMMARY

Mary Dyas

## INTRODUCTION

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This Draft Initial Study contains the California Energy Commission (Energy Commission) staff's evaluation of the Imperial Irrigation District's (IID) El Centro Unit 3 Repower, Application for a Small Power Plant Exemption (SPPE).

The Energy Commission has the exclusive authority 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 not exceeding 100 MW from the site certification process if it finds that no substantial adverse impact on the environment or energy resources would result from the construction or operation of the proposed facility (Pub. Resources Code § 25541). Under this exemption process, the Energy Commission prepares the environmental document that would be used by local and state agencies that issue the necessary permits.

In this Draft Initial Study, staff examined the environmental, energy resources, public health and safety, and transmission systems engineering aspects of the El Centro Unit 3 Repower project. Energy Commission staff has presented conclusions and proposed conditions of exemption that it believes are necessary to mitigate or avoid significant adverse environmental impacts of the proposed facility, if exempted.

## BACKGROUND

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On May 19, 2006, the Imperial Irrigation District (IID) filed the SPPE application (06-SPPE-2) for the El Centro Unit 3 Repower project and staff began its review of the project. The Energy Commission appointed a Committee to oversee the SPPE application at the March 29, 2006, business meeting. On August 4, 2006, an Informational Hearing and Site Visit were conducted for the El Centro Unit 3 Repower project in the City of El Centro.

The analyses contained in this Draft Initial Study are based upon information from:

1. the SPPE application for the El Centro Unit 3 Repower project;
2. the applicant's responses to data requests;
3. comments from federal, and local agencies;
4. various documents and publications listed at the end of each section;
5. a public meeting and site visit; and
6. Staff's independent investigation and analyses.

The Energy Commission staff and the Committee assigned to the case have made a substantial effort to notify interested parties and encourage public participation in the El Centro Unit 3 Repower SPPE review process.

The Energy Commission has:

- Mailed separate Notices of Receipt of the Application for Small Power Plant Exemption (SPPE) to interested parties, local libraries, responsible and trustee agencies, and contiguous property owners on May 22, 2006;
- Mailed a Notice of Public Hearing and Site Visit on July 12, 2006, to responsible and trustee agencies, persons with property contiguous to the proposed project, and individuals that expressed interest;
- Sent an informational newsletter submission in both English and Spanish to a grade school, day-care facility, fire department, medical clinic, and churches within a 6-mile radius of proposed project;
- Conducted an Informational Hearing and Site Visit on August 4, 2006, in El Centro; and

## **PROJECT DESCRIPTION**

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The IID proposes to replace an existing steam-generating unit within the site of the existing El Centro Generating Station (ECGS) located in El Centro, Imperial County, California. The El Centro Unit 3 Repower Project would be owned and operated by IID. Unit 3 will continue to serve the growing electrical load demands of the region. The repower project will increase the existing Unit 3 generating capacity by 84 megawatts (MW) from 44 MW to 128 MW.

A more complete description of the project, including a description and maps of the proposed upgrades to the transmission, water, and natural gas pipeline systems, is contained in the **PROJECT DESCRIPTION** section of this Initial Study. (**See Project Description Figures 1 & 2**)

## **STAFF'S ASSESSMENT CONCLUSIONS**

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

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

The following table presents a summary of staff's analysis of the potential impacts of the El Centro Unit 3 Repower project. Staff has requested additional information for the Air Quality issues identified in this draft analysis and in an issue identification report filed

earlier in the process. Data responses related to Waste Management data requests 30 - 32 are expected to be filed by the end of September 2006. With the Conditions of Exemption recommended herein, the requested information and workshop discussions, staff anticipates resolving the issues in the Final Initial Study.

### Summary of Conclusions: Environmental and Energy Resources Checklist

|                                     | Potentially Significant Impact | Less Than Significant With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|-------------------------------------|--------------------------------|--|------------------------------|-----------|
| <b>ENVIRONMENTAL</b>                |                                |  |                              |           |
| Air Quality                         |                                | X  |                              |           |
| Biological Resources                |                                | X  |                              |           |
| Cultural Resources                  |                                | X  |                              |           |
| Energy Resources                    |                                |  |                              | X         |
| Geology and Paleontology            |                                | X  |                              |           |
| Hazardous Materials                 |                                |  | X                            |           |
| Land Use/Recreation/Agricultural    |                                |  |                              | X         |
| Noise                               |                                | X  |                              |           |
| Public Health                       |                                | X  |                              |           |
| Socioeconomics                      |                                |  |                              | X         |
| Soils and Water Quality             |                                | X  |                              |           |
| Traffic & Transportation            |                                | X  |                              |           |
| Visual Resources                    |                                |  | X                            |           |
| Waste Management                    |                                | X  |                              |           |
| <b>ENGINEERING</b>                  |                                |  |                              |           |
| Transmission Line Safety & Nuisance |                                | X  |                              |           |
| Transmission System Engineering     |                                | X  |                              |           |

## PUBLIC REVIEW

Written comments on the Draft Initial Study must be submitted to the Energy Commission staff by October 23, 2006, by email or mail to the address below. An additional opportunity to make comments will be provided at a workshop scheduled for October 12, 2006, and at hearing(s) to be scheduled at a later date. For further information or to submit written comments, please contact:

Mary Dyas, Project Manager  
 California Energy Commission  
 1516 9<sup>th</sup> Street, MS - 15  
 Sacramento, CA 95814  
 Phone: (916) 651-8891  
 Fax: (916) 654-3882  
 E-mail: [mdyas@energy.state.ca.us](mailto:mdyas@energy.state.ca.us)

To review documents, copies of notices and other relevant information on the project, please see the Energy Commission Web page at:  
[\[http://www.energy.ca.gov/sitingcases/elcentro\]](http://www.energy.ca.gov/sitingcases/elcentro)

# INTRODUCTION

Mary Dyas

## PURPOSE OF THIS REPORT

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The applicant, Imperial Irrigation District (IID or applicant) filed a request for a Small Power Plant Exemption (SPPE) with the California Energy Commission (Energy Commission) on May 19, 2006.

California's Warren-Alquist Act (Pub. Resources Code (PRC) § 25000 et seq.) gives the Energy Commission the exclusive authority 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 not exceeding 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.). Pub 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 Draft Initial Study in accordance with CEQA and Title 20, California Code of Regulations (CCR) sections 1934 et seq. and 2300 et seq.

## STAFF ANALYSIS

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Staff's environmental analysis in the Draft Initial Study document is the factual basis for its recommendation regarding the project's potential to result in substantial adverse impacts on the environment, public health 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 to avoid significant impacts or the need for further mitigation. Staff will schedule a Draft Initial Study workshop within three weeks of the publication of this document to discuss it with interested parties and receive comments on the contents. As a result of the workshop and additional evidence provided in this review proceeding, staff will produce a Final Initial Study.

## REVIEW PROCESS

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The Energy Commission's assigned Committee (Committee) will conduct a hearing at which all parties will have an opportunity to comment on the Final 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 comments and render a decision on the application for the SPPE.

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 separate Notices of Receipt of the Application for Small Power Plant Exemption (SPPE) to interested parties, local libraries, responsible and trustee agencies, and contiguous property owners on May 22, 2006;
- Mailed a Notice of Public Hearing and Site Visit on July 12, 2006, to responsible and trustee agencies, persons with property contiguous to the proposed project, and individuals that expressed interest;
- Distributed flyers describing the project and informing the public of the Informational Hearing/Site Visit through the El Centro community in both English and Spanish;
- Conducted an Informational Hearing and Site Visit on August 4, 2006 in El Centro, and
- Mailed Notices of Availability for the Draft Initial Study to interested parties, local libraries, responsible and trustee agencies, and contiguous property owners on September 22, 2006.

Staff will accept public comment on this Initial Study until October 23, 2006. Please see the Executive Summary for Draft Initial Study summary details.

# PROJECT DESCRIPTION

Mary Dyas

## PROJECT TITLE

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El Centro Unit 3 Repower Project, Application for Small Power Plant Exemption (06-SPPE-2).

## PROJECT SPONSOR'S NAME AND ADDRESS

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Imperial Irrigation District  
333 East Barioni Blvd  
P. O. Box 937  
Imperial, CA 92251-0937

## LEAD AGENCY NAME AND ADDRESS

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

## PROJECT LOCATION

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The El Centro Unit 3 Repower project is proposed to be located within the existing El Centro Generating Station (ECGS) Site, which is located at 485 East Villa Avenue, in El Centro, California and owned by the Imperial Irrigation District (IID). The new Unit 3 combustion turbine generator (CTG)/heat recovery steam generator (HRSG) will be located adjacent to and north of the existing Unit 3 boiler on the west side of the existing steam turbine building and south of Unit 2. **See Project Description Location Map Figure 1.**

## GENERAL PLAN DESIGNATION

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Imperial County General Plan Designation: General Agriculture (A-2) and Manufacturing Light Industrial (M-1)

## ZONING

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The project site is currently zoned Limited Use (LU) by the City of El Centro which includes transmission of electrical, gas, geothermal, or other forms of energy. The Imperial County zoning designations on the north and east borders of the project site are General Agriculture (A-2), and Manufacturing Light Industrial (M-1). M-1 zoning includes "Electric Power Generation and requires a general plan amendment and conditional use permit from the Imperial County Planning/Building Department prior to the construction of the proposed project."

## DESCRIPTION OF PROJECT

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IID proposes to replace an existing steam-generating unit within the site of the existing El Centro Generating Station (ECGS). The El Centro Unit 3 Repower Project would be owned and operated by IID. Unit 3 will continue to serve the growing electrical load demands of the region.

The proposed project will replace an existing boiler with a General Electric Frame 7EA dry low nitrogen oxides (NO<sub>x</sub>) combustion turbine generator and heat recovery steam generator to supply steam to the existing steam turbine generator. The generator output from the Unit 3 repower will be stepped-up to transmission system voltage and interconnected to the existing IID El Centro Switching Station also located within the ECGS property. Most of the existing Unit 3 plant systems will continue to be used with only minor modifications. The proposed project will increase the existing Unit 3 generating capacity by 84 megawatts (MW) from 44 MW to 128 MW. **See Project Description Site Layout Figure 2.**

## WATER SUPPLY AND USE

Annual water consumption for the Unit 3 repower will be limited to 1,029 acre-feet annually. The existing ECGS uses raw water from IID's Dogwood surface canal Gate 54B for cooling tower make-up. An existing demineralization system treats the raw water to provide high quality make-up water. These existing systems will be used to meet the expected water requirements for the proposed project.

## WASTEWATER

The NPDES permit for discharges from the entire ECGS was issued in 2004 and established discharge limitations for toxics as required by the California Toxics Rule (CTR). The NPDES permit requires compliance with the toxics discharge limitations by July 1, 2009. To address this requirement, IID plans to install a deep well injection system for wastewater from the entire ECGS Site. The recommended system consists of two Class I non-hazardous wastewater deep injection wells approximately 2,000 feet below ground surface. With installation of the deep well injection system, cooling tower blow-down and other process wastewater streams will be discharged into a deep well injection system. Since the new deep well injection wastewater disposal system is needed for the entire ECGS Site, IID is implementing the system independent of this SPPE. These wells will be located on the ECGS property and are being permitted separately from this SPPE.

## TRANSMISSION

The new combustion turbine generator step-up transformer will interconnect with the existing 92-kV portion of the El Centro Switching Station via an overhead line approximately 2,350 feet long and 50 to 80 feet high. The interconnection facilities are entirely within the existing El Centro Switching Station and adjacent areas within the ECGS property.

## **NATURAL GAS**

The Unit 3 repower will interconnect to the existing Southern California Gas Company high pressure gas metering station located on the existing ECGS property. The connection will occur via two existing pipelines running south from the Gas Company's Niland regulating station to the ECGS. Minor modifications at the ECGS site will be performed to support the proposed project including changes to the metering station for increasing the flow of high-pressure gas through the station serving the new Unit 3 combustion turbine.

## **EMISSION CONTROLS**

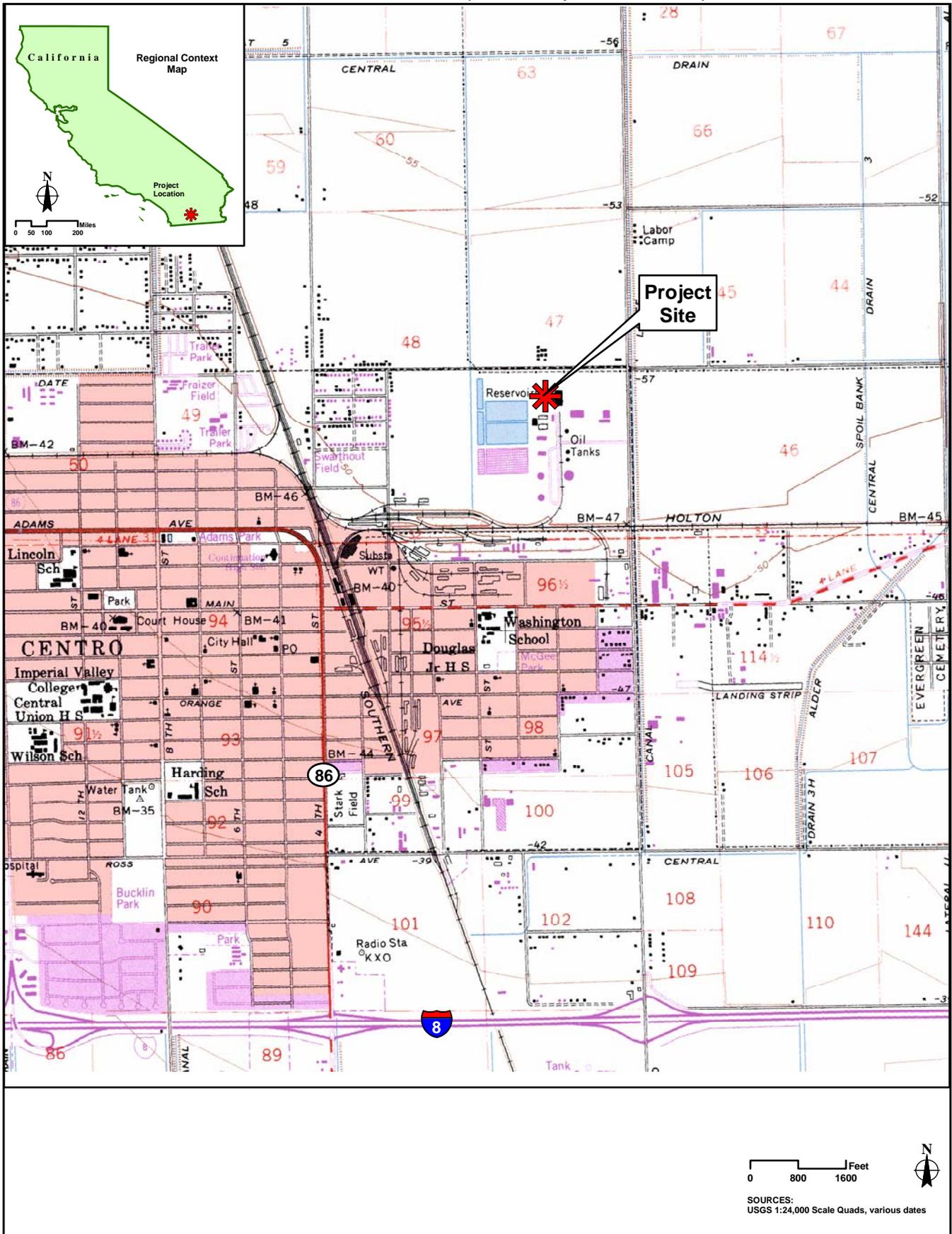
The El Centro Unit 3 repower project will be equipped with Best Available Control Technology (BACT) to control air pollutant emissions. The equipment used to control emissions includes a combustion turbine generator (CTG) and heat recovery steam generator (HRSG). The emission control system for the CTG/HRSG consists of an anhydrous ammonia based Selective Catalytic Reduction (SCR) system and carbon monoxide (CO) oxidation catalyst emission control system to further reduce emissions down to 2 ppm nitrogen oxides (NOx) and 4 ppm CO.

## **CONSTRUCTION SCHEDULE AND WORKFORCE**

If the exemption is approved by the Energy Commission, the IID will acquire all necessary permits for project construction. Following the acquisition of these permits, the IID Board is expected to release major equipment for fabrication and retain the services of an engineering, procurement and construction contractor. The start of commercial operation is expected in May 2009. IID estimates the construction costs of the Unit 3 repower to be \$73.5 million.

The IID expects to employ a maximum of 98 construction workers, with an average of 73, over a 20 month period beginning in September 2007. Operation of the project will require no additional workers. Annual operation costs are estimated to be approximately \$3.5 million.

**PROJECT DESCRIPTION - FIGURE 1**  
 SPPE - El Centro Unit 3 Repower - Project Location Map

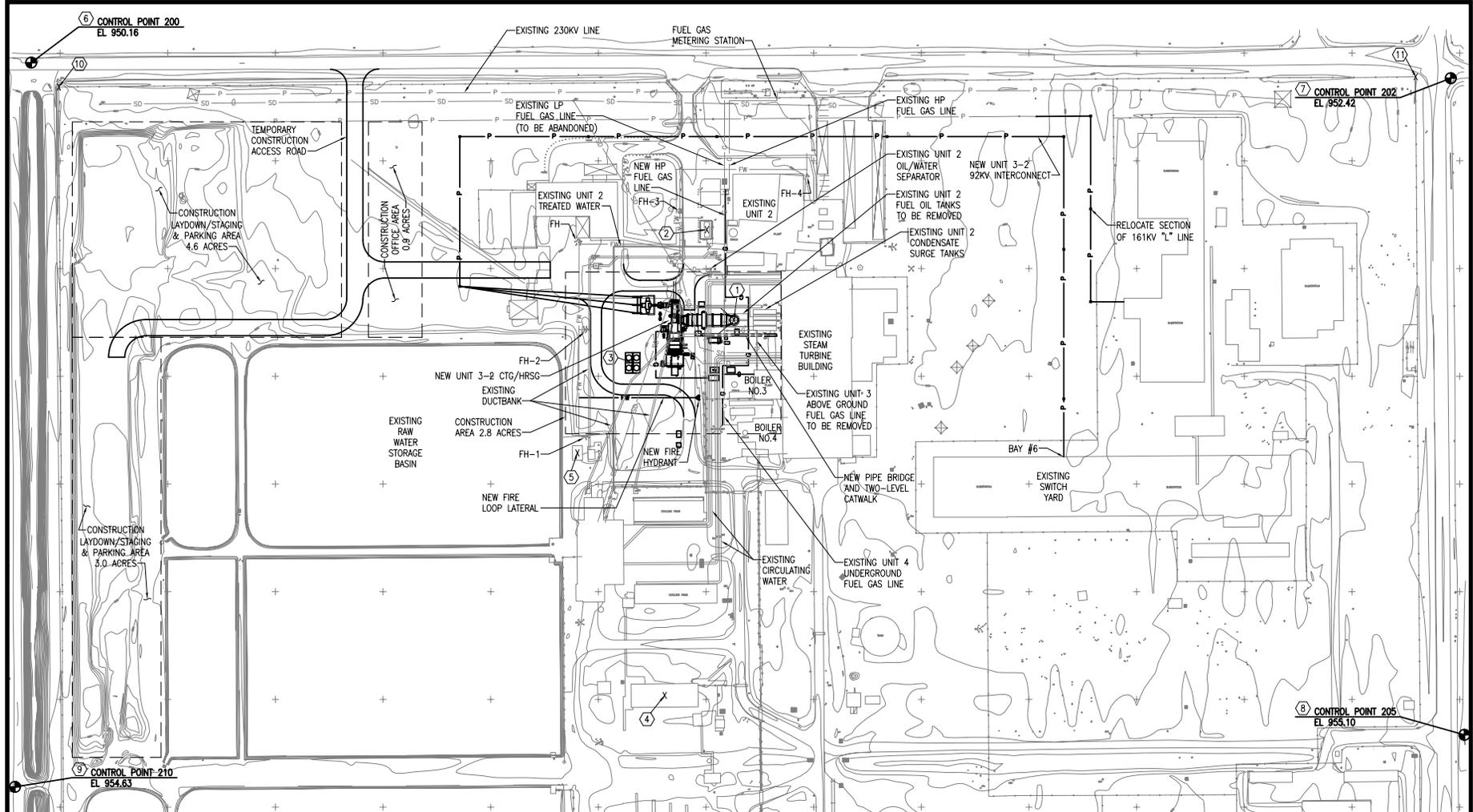


CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, SEPTEMBER 2006

SOURCE: SPPE Application May 2006, Vol. 1, Figure 2-1

**PROJECT DESCRIPTION - FIGURE 2**  
**SPPE - El Centro Unit 3 Repower - Site Plan**

SEPTEMBER 2006



PROJECT DESCRIPTION

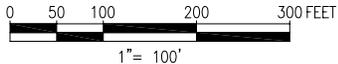
**NOTES**

1. TOPOGRAPHIC INFORMATION PROVIDED BY TRI STATE SURVEYING, LTD. (775) 358-9491. PROJECT NO. 05383.01, 8-25-05.
2. PROPERTY CORNER AND BOUNDARY INFORMATION OBTAINED FROM \*.
3. EXISTING FEATURES ARE DEPICTED BY LIGHTER WEIGHT (SCREENED) LINES. NEW STRUCTURES AND FACILITIES ARE SHOWN IN HEAVIER LINES.

| LOCATION | DESCRIPTION                   | STATE PLANE COORDINATE (FEET, NAD 83) |            | UTM COORDINATE (METERS, NAD 83) |            |
|----------|-------------------------------|---------------------------------------|------------|---------------------------------|------------|
|          |                               | NORTHING                              | EASTING    | NORTHING                        | EASTING    |
| 1        | UNIT 3-2 EXHAUST STACK        | 1872504.35                            | 6779851.87 | 3630334.457                     | 636700.785 |
| 2        | AMMONIA STORAGE TANK          | 1872672.20                            | 6779801.71 | 3630385.392                     | 636685.253 |
| 3        | UNIT 3-2 COOLING WATER MODULE | 1872424.97                            | 6779663.75 | 3630309.824                     | 636643.667 |
| 4        | UNIT 3-1 COOLING TOWER        | 1871807.38                            | 6779723.11 | 3630121.798                     | 636663.070 |
| 5        | DIESEL FIRE PUMP              | 1872257.56                            | 6779561.14 | 3630258.655                     | 636612.794 |
| 6        | CONTROL POINT 200             | 1872982.41                            | 6778546.39 | 3630477.237                     | 636301.967 |
| 7        | CONTROL POINT 202             | 1872953.38                            | 6781183.51 | 3630473.989                     | 637105.611 |
| 8        | CONTROL POINT 205             | 1871734.29                            | 6781208.80 | 3630102.616                     | 637116.024 |
| 9        | CONTROL POINT 210             | 1871637.63                            | 6778516.21 | 3630067.39                      | 636295.648 |
| 10       | EXISTING FENCE CORNER         | 1872937.09                            | 6778597.75 | 3630463.582                     | 636317.698 |
| 11       | EXISTING FENCE CORNER         | 1872956.09                            | 6781118.36 | 3630474.797                     | 637085.808 |

**LEGEND**

- - - - - PROPERTY LINE
- - - - - EXISTING OVERHEAD ELECTRICAL LINE
- - - - - EXISTING FIRE WATER
- - - - - EXISTING POTABLE WATER
- - - - - EXISTING STORM DRAIN
- - - - - EXISTING DRAIN
- - - - - EXISTING GAS
- - - - - FENCE
- - - - - OVERHEAD ELECTRICAL LINE
- - - - - FIRE WATER
- - - - - GAS
- - - - - WASTE WATER
- WASTE WATER FIRE HYDRANT



# AIR QUALITY

Tuan Ngo, P.E.

## INTRODUCTION

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This Draft Initial Study analysis addresses the potential air quality impacts resulting from the emissions of criteria air contaminants due to the construction and operation of the Imperial Irrigation District's (IID or applicant) El Centro Unit 3 Repower Project (project). In completing this analysis, the Energy Commission staff (staff) evaluated the issues identified in the California Environmental Quality Act (CEQA) Air Quality Checklist.

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

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**AIR QUALITY Table 1** summarizes the applicable LORS.

**AIR QUALITY Table 1**  
**Laws, Ordinances, Regulations, and Standards**

| <i>Applicable LORS</i> | <i>Description</i>   |
|------------------------|--|
| <b>Federal</b>         | New Source Review: Best Available Control Technology (BACT) and Offset requirements  |
|                        | Title V: Federal permit  |
|                        | New Source Performance Standard: 75 ppm NO <sub>x</sub> and 150 ppm SO <sub>x</sub> @15% oxygen (O <sub>2</sub> ).   |
| <b>State</b>           | California Health and Safety Code: Permitting of source needs to be consistent with approved Clean Air Plan.   |
| <b>Local</b>           | New Source Review: BACT, offsets, and new sources shall not cause or make worse a violation of an Ambient Air Quality Standard.  |
|                        | Acid Rain: Requires continuous emission monitoring system  |
|                        | Particulate Matter and Visible Emissions: Emissions shall not be darker than Ringelmann No. 1 for a continuous three-minutes, and no more than 0.01 grains PM per standard dry cubic foot. |
|                        | Fuel burning equipment: Nitrogen Oxides shall not exceed 140 lbs/hour.   |

## SETTING

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### CLIMATE AND METEOROLOGY

The project site is located in the Salton Sea Air Basin in the northeastern portion of the City of El Centro in the Imperial Valley. The project site is generally flat and is dominated by vacant or agricultural land.

The general area of Imperial County is classified as arid, with hot summers and mild winters. During the summer, the Pacific high-pressure zone is well-developed to the west of California, and a thermal trough overlies California's southeast desert region.

The intensity and orientation of the trough varies from day to day. Air stagnation conditions can occur for a day or for a few days during the presence of a Pacific high-pressure system. Although the rugged mountainous country surrounding the Imperial Valley inhibits circulation, the influence of the trough does permit some inter-basin exchange of air with more westerly coastal locations through the mountain passes.

Relative humidity in the summer is low, averaging 30 to 50 percent in the early morning and 10 to 20 percent in the afternoon. During the hottest part of the day, a relative humidity below 10 percent is common, although the effect of extensive agricultural operations in the Imperial Valley tends to raise the humidity locally. The prevailing weather conditions promote intense heating during the day in summer, with marked cooling at night. The area temperatures can fluctuate between 40°F and 70°F in January and between 75°F and 105°F or more in July. The average annual precipitation is approximately 3 inches.

Figure 6.1-2 of the application for Small Power Plant Exemption (SPPE) (IID2006a) is a wind rose plot that illustrates the annual distribution of hourly wind direction and speed measurements from 1991 through 1995 at the Imperial County Airport. Monthly average wind speeds in the region range from 6.6 miles per hour (mph) in October to 9.5 mph in July. Winds average 7.8 mph annually. Winds in the valley are primarily from the west to the east throughout the year, but have a secondary east/southeast component in the fall.

## EXISTING AMBIENT AIR QUALITY

The Federal Clean Air Act and the California Clean Air Act both require the establishment of standards for ambient concentrations of air pollutants, called ambient air quality standards (AAQS). The state AAQS, established by the California Air Resources Board (CARB), are typically lower (more protective) than the federal AAQS, which are established by the United States Environmental Protection Agency (U.S. EPA). The state and federal air quality standards listed in **AIR QUALITY Table 2** show the averaging times for the various air quality standards, which range from one-hour to an annual average. The standards are read as a concentration, in parts per million (ppm), or as a weighted mass of material per a volume of air, in milligrams or micrograms of pollutant in a cubic meter of air ( $\text{mg}/\text{m}^3$  or  $\mu\text{g}/\text{m}^3$ , respectively).

In general, an area or air basin is designated as attainment if the concentration of a particular air contaminant does not exceed the standard. Likewise, an area is designated as non-attainment for an air contaminant if that contaminant standard is violated. When there is not enough ambient data available to support designation as either attainment or non-attainment, the area can be designated as unclassified. The unclassified area is normally treated the same as an attainment area for regulatory purposes. An area could be attainment for one air contaminant while non-attainment for another, or attainment for the federal standard and non-attainment for the state standard for the same air contaminant.

**AIR QUALITY Table 2**  
**Ambient Air Quality Standards**

| Pollutant                                    | Averaging Time | California Standards              | Federal Standards                  |                                   |
|--|----------------|-----------------------------------|------------------------------------|-----------------------------------|
|  |                |                                   | Primary                            | Secondary                         |
| Ozone(O <sub>3</sub> )                       | 1-hour         | 0.09 ppm (180 µg/m <sup>3</sup> ) | 0.12 ppm (235 µg/m <sup>3</sup> )  | Same as primary                   |
| Particulate Matter (PM <sub>10</sub> )       | Ann.Geo. Mean  | 20 µg/m <sup>3</sup>              | ---                                | Same as primary                   |
|  | 24-hour        | 50 µg/m <sup>3</sup>              | 150 µg/m <sup>3</sup>              |                                   |
|  | Ann.Arit. Mean | ---                               | 50 µg/m <sup>3</sup>               |                                   |
| Fine Particulate Matter (PM <sub>2.5</sub> ) | 24-hour        | No separate standard              | 65 µg/m <sup>3</sup>               | Same as primary                   |
|  | Ann.Arit. Mean | 12 µg/m <sup>3</sup>              | 15 µg/m <sup>3</sup>               | Same as primary                   |
| Carbon Monoxide (CO)                         | 1-hour         | 20 ppm (23 mg/m <sup>3</sup> )    | 35 ppm (40 mg/m <sup>3</sup> )     | None                              |
|  | 8-hour         | 9 ppm (10 mg/m <sup>3</sup> )     | 9 ppm (10 mg/m <sup>3</sup> )      |                                   |
| Nitrogen Dioxide (NO <sub>2</sub> )          | 1-hour         | 0.25 ppm (470 µg/m <sup>3</sup> ) | ---                                | Same as primary                   |
|  | Ann.Arit. Mean | ---                               | 0.053 ppm (100 µg/m <sup>3</sup> ) |                                   |
| Lead(Pb)                                     | 30-day         | 1.5 µg/m <sup>3</sup>             | ---                                | Same as primary                   |
|  | Cal. Quarter   | ---                               | 1.5 µg/m <sup>3</sup>              |                                   |
| Sulfur Dioxide (SO <sub>2</sub> )            | Ann.Arit. Mean | ---                               | 0.03 ppm (80 µg/m <sup>3</sup> )   | ---                               |
|  | 24-hour        | 0.04 ppm (105 µg/m <sup>3</sup> ) | 0.147 ppm (365 µg/m <sup>3</sup> ) | ---                               |
|  | 3-hour         | ---                               | ---                                | 0.5 ppm (1300 µg/m <sup>3</sup> ) |
|  | 1-hour         | 0.25 ppm (655 µg/m <sup>3</sup> ) | ---                                | ---                               |
| Sulfates                                     | 24-hour        | 25 µg/m <sup>3</sup>              | No federal standard                |                                   |
| H <sub>2</sub> S                             | 1-hour         | 0.03 ppm (42 µg/m <sup>3</sup> )  | No federal standard                |                                   |

Source: California Air Resources Board

**AIR QUALITY Table 3** shows the designation status of the area air basin (Salton Sea) for each criteria pollutant for both the federal and state ambient air quality standards. The federal classifications range from moderate to extreme.

**AIR QUALITY Table 3**  
**Federal and State Attainment Status for the Salton Sea Air Basin**

| Pollutants       | Federal Classification      | State Classification    |
|------------------|-----------------------------|-------------------------|
| Ozone            | Transitional Non-Attainment | Moderate Non-Attainment |
| PM10             | Serious Non-Attainment      | Non-Attainment          |
| PM2.5            | Unclassified/Attainment     | ---                     |
| CO               | Unclassified/Attainment     | Unclassified            |
| NO <sub>2</sub>  | Attainment                  | Attainment              |
| SO <sub>2</sub>  | Attainment                  | Attainment              |
| H <sub>2</sub> S | ---                         | Unclassified            |

**AIR QUALITY Figures 1 and 2** summarize the historical air quality data for the generalized project location for PM10, CO, SO<sub>2</sub>, O<sub>3</sub>, and NO<sub>2</sub>. In both figures, the normalized concentrations represent the ratio of the highest measured concentrations measured at the El Centro monitoring station in a given year to the most stringent applicable national or state ambient air quality standard. Therefore, normalized concentrations lower than one indicates that the measured concentrations were lower than the most stringent ambient air quality standard (either a federal or state standard). Based on the ambient concentration data collected, the area is consistently below the most stringent ambient air quality standards for all criteria pollutants except for ozone and PM10. Below is a discussion of ambient air quality for O<sub>3</sub>, NO<sub>2</sub>, CO, PM10, and PM2.5.

## **REGIONAL AIR QUALITY CONDITIONS**

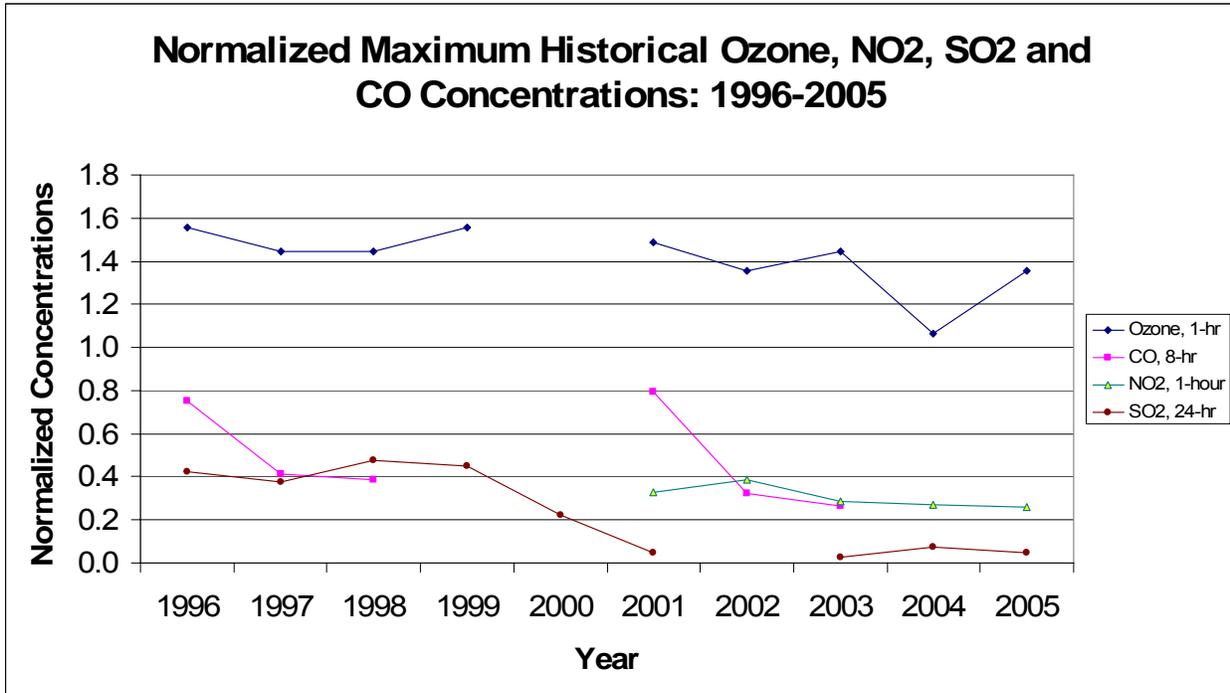
### **Ozone**

Ozone is not directly emitted from stationary or mobile sources, but is formed as the result of chemical reactions in the atmosphere between nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC) in the presence of sunlight. The ambient ozone concentrations recorded between 1996 and 2005 ranged from 9 to 14 parts per hundred millions (pphm). The entire Salton Sea air basin is classified as moderate non-attainment for the state 1-hour ozone air quality standard, and as transitional non-attainment for the federal 1-hour and marginal non-attainment for the federal 8-hour ozone standards.

### **Nitrogen Dioxide**

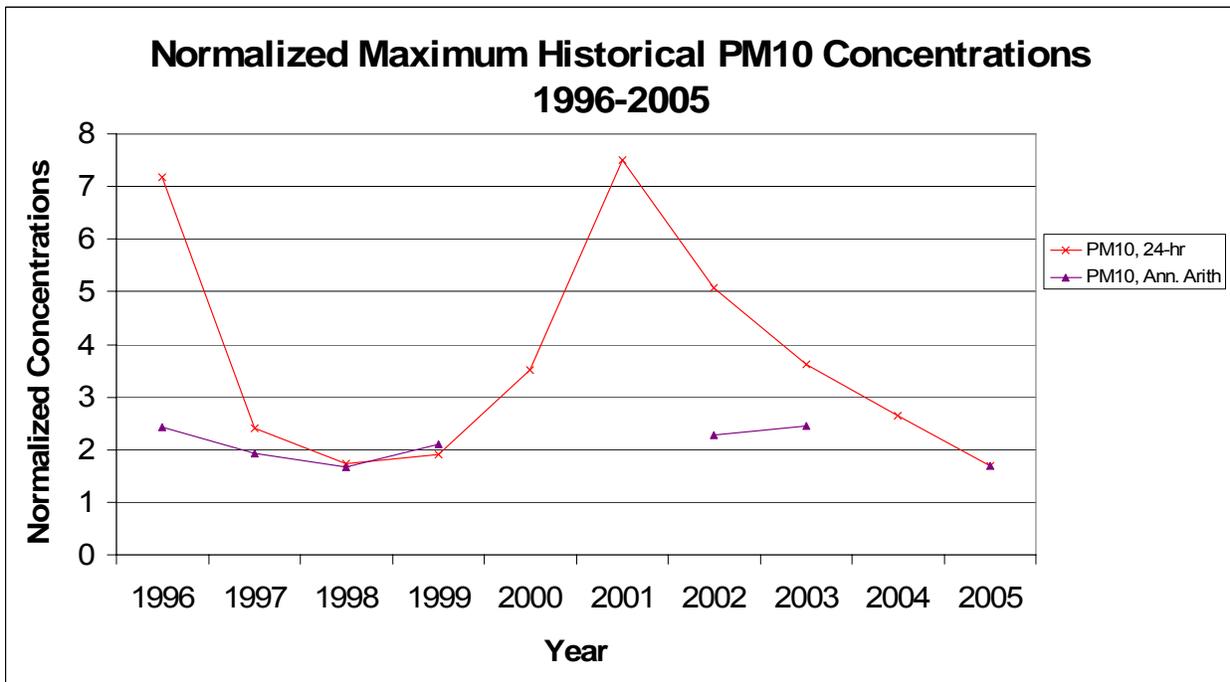
The entire air basin is classified as attainment for the state 1-hour nitrogen dioxide (NO<sub>2</sub>) standard. The NO<sub>2</sub> levels in the area are no more than 40 percent of the most stringent NO<sub>2</sub> ambient air quality standards, as shown in **AIR QUALITY Figure 1**. Approximately 90 percent of the NO<sub>x</sub> emitted from combustion sources is nitric oxide (NO), while the balance is NO<sub>2</sub>. Together, NO and NO<sub>2</sub> are known as NO<sub>x</sub>. NO is oxidized in the atmosphere to NO<sub>2</sub>, but some level of photochemical activity is needed for this conversion. The highest concentrations of NO<sub>2</sub> typically occur during the fall and not in the winter when atmospheric conditions favor the trapping of ground level

**AIR QUALITY Figure 1**



Source: CARB web site, <http://www.arb.ca.gov/adam/>

**AIR QUALITY Figure 2**



Source: CARB web site, <http://www.arb.ca.gov/adam/>

releases but lack significant photochemical activity (less sun light). In the summer the conversion rates of NO to NO<sub>2</sub> are high, but the relatively high temperatures and windy conditions disperse pollutants, preventing the accumulation of NO<sub>2</sub> to levels approaching the one-hour ambient air quality standard.

### **Carbon Monoxide**

The area is classified as attainment for the state 1-hour and 8-hour carbon monoxide (CO) standards. The CO concentration levels measured in the area show have never exceeded the standards (see **AIR QUALITY Figure 1**). The highest concentrations of CO occur when low wind speeds and a stable atmosphere trap the pollution emitted at or near ground level in what is known as the stable boundary layer. These conditions occur frequently in the wintertime late in the afternoon, persist during the night and may extend one or two hours after sunrise.

### **Particulate Matter (PM10)**

The area is classified as a serious non-attainment area for the federal PM10 standard, and as non-attainment for the state PM10 standard. Measured concentrations of PM10 in the project area show that the area experiences a number of violations of the state and the federal 24-hour PM10 standards. Staff reviewed the ambient air quality and weather data and believes that these violations were caused by occasional dust storms and industrial activities across the border from Mexico.

### **Fine Particulate Matter (PM2.5)**

Fine particulate matter, or PM2.5 (particulate matter less than 2.5 microns in diameter), is derived mainly from either the combustion of materials, or from precursor gases (SO<sub>x</sub>, NO<sub>x</sub>, and VOC) through complex reactions in the atmosphere. PM2.5 consists mostly of sulfates, nitrates, ammonium, elemental carbon, and a small portion of organic and inorganic compounds.

The U.S. EPA has promulgated a 65 µg/m<sup>3</sup> 24-hour PM2.5 standard and a 15 µg/m<sup>3</sup> annual PM2.5 standard, and has recently classified the district as unclassified/attainment for both the federal annual and 24-hour PM2.5 standards.

The California Air Resources Board (CARB) recently adopted a new annual PM2.5 standard of 12 µg/m<sup>3</sup>, but has not determined the attainment status of any district. The CARB also considered adopting a new 24-hour PM2.5 standard, but deferred the adoption of such a standard until a later date.

### **Nitrates and Sulfates**

PM nitrate (mainly ammonium nitrate) is formed in the atmosphere from the reaction of NO<sub>x</sub> and ammonia. NO<sub>x</sub>, as emitted from combustion sources, is mainly in the form of nitric oxide (NO). NO converts to NO<sub>2</sub> primarily by reacting with ozone in the ambient air. The formed NO<sub>2</sub> can convert back to NO, which sustains the ozone formation. NO<sub>2</sub> can also form organic nitrates, or be oxidized to nitric acid by available hydroxyl (OH) radicals in the ambient air. Nitric acid reacts with ammonia in ambient air to form ammonium nitrate. Ammonium nitrate, in its particulate form, can remain suspended in the ambient air and/or be transported long distance downwind as PM2.5. Ammonium

nitrate, under certain conditions of heat and humidity, breaks down to NO<sub>x</sub> and starts a new ozone cycle again.

PM sulfate (mainly ammonium sulfate) is formed in the atmosphere from the oxidation of SO<sub>2</sub> and subsequent neutralization by ammonia in the atmosphere. The oxidation of SO<sub>2</sub> depends on many factors, which include: the availability of hydroxyl (OH), hydroperoxy (HO<sub>2</sub>) and methylperoxy (CH<sub>3</sub>OH) radicals, and atmospheric humidity.

## **PROJECT DESCRIPTION**

The proposed project consists of replacing the existing boiler with a General Electric (GE) Frame 7EA dry low NO<sub>x</sub> combustion turbine generator (CTG) and heat recovery steam generator (HRSG) and duct burner to supply steam to the existing steam turbine generator. As such, most of the existing equipment at the site, including the cooling tower and auxiliary equipment will be utilized with minor modifications. The existing cooling tower unit will be retrofitted with a new, more efficient mist eliminator to reduce tower water consumption and mist (or drift).

The turbine and HRSG with duct-firing and the use of the existing steam turbine would produce approximately 128 MW of electricity resulting in a net increase of 84 MW from the existing capacity (IID2006a, pp. 2-1). The applicant proposes to equip the combustion turbine/HRSG unit with dry Lo-NO<sub>x</sub> emission combustor and selective catalytic reduction (SCR) systems to limit the NO<sub>x</sub> emissions to 2.0 ppm@15 percent O<sub>2</sub> (IID2006a, pp. 6.1-53). The applicant also proposes to install a CO oxidation catalyst system on the turbine to limit CO emissions to no more than 4 ppm and to limit VOC emissions to no more than 2.0 ppm (IID2006a, 6.1-53).

The applicant requests that the project be analyzed with the assumption of 7,980 hours of normal operation, 20 hours of maintenance, and 150 start-up and shutdown events each year (IID2006a, pp. 6.1-14). The CTG/HRSG would operate up to 8,475 hours per year (IID2006a, pp. 6.1-14 through 16). Using the proposed normal operation hours and the proposed start-up and shut down hours, the applicant has provided an estimate of the facility's emissions. The facility's expected maximum hourly, daily and annual emissions for NO<sub>x</sub>, VOC, PM<sub>10</sub>, SO<sub>x</sub> and CO are tabulated in **AIR QUALITY Table 4** below.

## **ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION**

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Staff assessed three kinds of impacts: construction, operational, and cumulative effects. Construction impacts result from the emissions occurring during the site preparation and construction of the project. The operational impacts result from the emissions of the proposed project during normal operation, which include maintenance, start-ups and shutdowns. Cumulative impacts result from the proposed project's incremental effect viewed over time, together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project. (Pub. Resources Code § 21083; Cal. Code Regs., tit. 14, §§ 15064(h), 15065(c), 15130, and 15355.)

**AIR QUALITY Table 4**  
**Facility's Maximum Hourly, Daily and Annual Emissions**

| Equipment                                      | NOx          | VOC         | SOx         | CO           | PM10 <sup>1</sup> |
|--|--------------|-------------|-------------|--------------|-------------------|
| Maximum Hourly Emissions (lb/hr)               |              |             |             |              |                   |
| Turbine/HRSG during commissioning <sup>2</sup> | 100          | 1.84        | 1.9         | 317          | 5                 |
| Turbine/HRSG (normal operation)                | 6.67         | 1.1         | 1.72        | 8.16         | 5                 |
| Cooling tower                                  | -            | -           | -           | -            | 0.6               |
| <b>Total Hourly (lb/hr)</b>                    | <b>100</b>   | <b>1.84</b> | <b>1.9</b>  | <b>317</b>   | <b>5.6</b>        |
| Maximum Daily Emissions (lb/day) <sup>3</sup>  |              |             |             |              |                   |
| <b>Total Daily (lb/day)</b>                    | <b>480</b>   | <b>40</b>   | <b>44.9</b> | <b>629</b>   | <b>134</b>        |
| Maximum Annual (tons/year) <sup>4</sup>        |              |             |             |              |                   |
|  | <b>37.18</b> | <b>4.79</b> | <b>7.52</b> | <b>47.51</b> | <b>21.06</b>      |

**Notes:**

1. All PM10 emissions from natural gas combustion are treated as PM2.5 (California Emission Inventory and Reporting System, CARB).
2. The turbine/HRSG maximum hourly emissions occur during commissioning (Table 6.1-13).
3. The maximum daily emissions include 2 start-ups, 2 shut downs, 2 hours of maintenance, and approximate 16 hours of normal operation for the turbine/HRSG and duct firing (Table C-10 App.C).
4. The maximum annual emissions include 150 startups/shutdowns (equivalent to approximately 475 hours), 7,980 hours of normal operation, and 20 hours of maintenance (Table 6.1-14).

Source: SPPE Section 6.1.2 (IID2006a).

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

| <b>ENVIRONMENTAL CHECKLIST</b>  | Potentially Significant Impact | Less than Significant With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-----------|
| AIR QUALITY – Would the project:  |                                |  |                              |           |
| A. Conflict with or obstruct implementation of the applicable air quality plan?<br>Ozone Plan<br>PM <sub>10</sub> Plan<br>Carbon Monoxide Plan  |                                | X<br>X   | X                            |           |
| B. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?  |                                | X  |                              |           |
| C. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? |                                | X  |                              |           |
| D. Expose sensitive receptors to substantial pollutant concentrations?  |                                | X  |                              |           |
| E. Create objectionable odors affecting a substantial number of people?   |                                |  | X                            |           |

## METHOD FOR DETERMINING SIGNIFICANCE AND MITIGATION

There are two criteria that staff used to determine whether the project emissions would be significant. The first is the status of the ambient air quality standards in the area. Staff considered that all non-attainment air contaminants and their precursors released during the construction and operation of this facility are significant and must be mitigated appropriately. For example, the area is currently non-attainment for ozone and PM10; therefore, all directly emitted PM10, and PM10 and ozone precursors (NO<sub>x</sub>, VOC, SO<sub>x</sub>) that the facility released during construction and operation will potentially cause significant impact through their contribution to the existing violations of the standards and interfere with applicable air quality plan. The second criterion that staff used is whether the project's construction and operational emissions would cause a new violation to the ambient air quality standards.

Following the above steps, staff determined whether these potential contributions are sufficiently mitigated by the use of control measures or emission reduction credits, or both.

### **A. Will the Project Conflict With, or Obstruct Implementation of the Applicable Air Quality Plan: Less Than Significant With Mitigation Incorporated**

The proposed project is located in Imperial County, which is in the Salton Sea Air Basin and is under the jurisdiction of the Imperial County Air Pollution Control District (District). The Salton Sea Air Basin is designated as non-attainment for both federal and state ozone and PM10 standards. All other federal and state criteria air contaminants (NO<sub>2</sub>, CO, PM2.5 and SO<sub>2</sub>) are considered to be either attainment by the state and/or unclassified/attainment by federal standards.

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

#### **Ozone**

The project will be required to comply with all applicable District rules and regulations, which specify the emissions control and offset requirements. The project will employ BACT (2 ppm for NO<sub>x</sub> and 2 ppm for VOC) and emission reduction credits to fully mitigate its operational emissions of NO<sub>x</sub> and VOC (IID2006a). Therefore, the project would not conflict with the District's ozone attainment plan.

#### **PM10**

The project will be required to comply with all applicable District rules and regulations, which specify the emissions control and offset requirements. For construction activities, the project will need to comply with the District Regulation VIII, which sets the standard practices to reduce PM10 emissions from fugitive dust sources and construction equipment. Staff also recommends the implementation of construction related control measures **AQ-SC1 to AQ-SC5** (see the Construction Impacts Section), which are intended to supplement the District's Rules and

Regulations and to minimize the construction activities related PM10 emissions to the maximum extent feasible. The project will also employ BACT and emission reduction credits to fully mitigate its PM10 operational emissions. Therefore, the project would not conflict with the District's PM10 attainment plan.

### **Carbon Monoxide**

The project's maximum worst case CO emissions impacts were analyzed using regulatory approved modeling techniques (see the Impacts Section). The results of this analysis show that the project would not cause a new violation to any CO ambient air quality standards. Therefore, the project would not conflict with or obstruct the District CO attainment maintenance plan.

### **B. Will the Project Cause New Violations or Contribute to An Existing Violations of the AQ Standards: Less Than Significant With Mitigation Incorporated**

The applicant used an EPA-approved ISCST3 model to estimate the impacts of the project's NOx, PM10, CO, and SOx emissions resulting from project construction and operation. A description of the modeling analysis and its results are provided in Section 6.1.2.3 of the SPPE application (IID2006a). Staff added the applicant's modeled impacts to the highest ambient background concentrations recorded during the previous five years from nearby monitoring stations. Staff then compared the results with the ambient air quality standards for each respective air contaminant to determine whether the project's emission impacts would cause a new violation of the ambient air quality standards or would contribute to an existing violation.

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

In general, the inputs for the modeling include stack information (exhaust flow rate, temperature, and stack dimensions), specific turbine emission data and meteorological data, such as wind speed, atmospheric conditions, and site elevation. For this project, the meteorological data used as inputs to the model included hourly wind speeds and directions measured a quarter mile north of the project site.

### **Construction Impacts**

The results of the project's construction impacts analysis are presented in **AIR QUALITY Table 5**. The modeling analysis included both the fugitive dust and vehicle exhaust emissions, which include PM10, NOx, and CO. In **AIR QUALITY Table 5**, the first and second columns list the air contaminant, i.e., NO<sub>2</sub>, PM10, and CO, and the averaging time for each air contaminant analyzed. The third column presents the project emission impacts, and the fourth column presents the highest measured concentration of the criteria air contaminants in the ambient air (background). The fifth column presents the total impact, i.e., the sum of project emission impact and background measured concentration.

As shown by the modeling results provided in **AIR QUALITY Table 5**, all of the worst-case emission impacts expected during the construction period, except PM10, are predicted to be lower than the most stringent ambient air quality standard and, therefore, are not significant. The construction PM10 impacts would contribute to existing violations of the area ambient air quality standards for PM10; therefore, the project construction impacts on the area's PM10 air quality are significant.

**AIR QUALITY Table 5**  
**Maximum Project Construction Impacts**

| Pollutants      | Avg. Period | Impacts ( $\mu\text{g}/\text{m}^3$ ) | Background ( $\mu\text{g}/\text{m}^3$ ) | Total Impact ( $\mu\text{g}/\text{m}^3$ ) | State Standard ( $\mu\text{g}/\text{m}^3$ ) | Percent of Standard |
|-----------------|-------------|--------------------------------------|---|---|---|---------------------|
| NO <sub>2</sub> | 1-hr.       | 258                                  | 180                                     | 438                                       | 470   | 94%                 |
| CO              | 8-hr.       | 487                                  | 6,778                                   | 7,265                                     | 10,000                                      | 73%                 |
| PM10            | 24-hr.      | 19                                   | 383                                     | 402                                       | 50  | <b>800%</b>         |

Source: Application for SPPE, Table 6.1-17 (IID2006a).

While the modeling results show that the worst-case 24-hour maximum fence line concentration would contribute to existing violations of the PM10 standards, the modeled PM10 concentrations are predicted to decrease quickly with distance and are predicted to be less than  $0.5 \mu\text{g}/\text{m}^3$  at the nearest residential receptor. Staff concludes that with appropriate mitigation, such as those from the District, those proposed by the applicant, and staff recommended mitigation measures (see the Construction Impact Mitigation section), the construction emission impacts would be less than significant.

### Construction Impacts Mitigation

To mitigate the impacts due to construction of the facility, staff recommends the implementation of mitigation measures contained in Conditions of Exemption **AQ-SC1** to **AQ-SC5**. As mentioned earlier, these conditions are intended to supplement the District Regulation VIII requirements and include all of the applicant's proposed mitigation measures, and are listed below:

- a) All unpaved roads and disturbed areas in the project and linear construction sites will be watered until sufficiently wet to ensure that no visible dust plumes leave the project site.
- b) Vehicle speeds will be limited to 10 miles per hour within the construction site.
- c) All construction equipment vehicle tires will be washed or cleaned free of dirt prior to entering paved roadways.
- d) Gravel ramps will be provided at the tire washing/cleaning station.
- e) All entrances to the construction site will be graveled or treated with water or dust soil stabilization compounds.
- f) Construction areas adjacent to any paved roadway will be provided with sandbags to prevent run-off to the roadway.

- g) All paved roads within the construction site will be swept twice daily when construction activity occurs.
- h) At least the first 500 feet of any public roadway exiting from the construction site will be swept at least twice daily on days when construction activity occurs, and twice daily on any other day when dirt or runoff from the construction site is visible on the public roadways.
- i) All soil storage piles and disturbed areas that remain inactive for longer than 10 days will be covered, or be treated with appropriate dust suppressant compounds.
- j) All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions will be provided with a cover, or the materials will be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard.
- k) Wind erosion control techniques such as windbreaks, water, chemical dust suppressants, and vegetation will be used on all construction areas that may be disturbed. Any windbreaks used will remain in place until the soil is stabilized or permanently covered with vegetation.
- l) Any construction activities that may cause excessive fugitive dust will cease when the wind exceeds 25 miles per hour unless water, chemical dust suppressants, or other measures have been applied to reduce dust such that no visible dust leaves the project site.
- m) All diesel-fueled construction equipment would use ultra-low sulfur diesel fuel, and would be equipped with low emission diesel engines and, if appropriate, soot filters.

### **Operation Impacts**

The applicant provided a modeling analysis using the EPA-approved ISCST3 model to estimate the impacts of the project's NO<sub>x</sub>, PM<sub>10</sub>, CO, and SO<sub>x</sub> emissions resulting from project operation (IID2006a).

Similar to the assessment of construction impacts, staff added the modeled impacts to the available highest ambient background concentrations recorded during the previous five years from nearby monitoring stations to assess the project operational impacts.

Staff tabulated the results of the modeling analysis for turbines, including steady state and start-up/maintenance events in **AIR QUALITY Table 6**. The analysis shows that the project does not cause any new violations of NO<sub>2</sub>, CO or SO<sub>2</sub> air quality standards, even combined with the worst case ambient concentrations recorded. The project, however, would contribute to existing violations of the state and the federal 24-hour and annual PM<sub>10</sub> air quality standards. The project's impacts on the area's PM<sub>10</sub> air quality are significant.

**AIR QUALITY Table 6**  
**Project Operation Emission Impacts**

| Pollutants        | Avg. Period                       | Impacts (µg/m <sup>3</sup> ) | Background (µg/m <sup>3</sup> ) | Total Impacts (µg/m <sup>3</sup> ) | Standard (µg/m <sup>3</sup> ) | Percent of Standard |
|-------------------|-----------------------------------|------------------------------|---------------------------------|------------------------------------|-------------------------------|---------------------|
| NO <sub>2</sub>   | 1-hour (worst case <sup>1</sup> ) | 155                          | 180                             | 335                                | 470 <sup>2</sup>              | 71%                 |
|                   | 1-hour (steady state)             | 11                           | 180                             | 191                                | 470 <sup>2</sup>              | 41%                 |
|                   | Annual                            | 0.5                          | 35.9                            | 36                                 | 100 <sup>3</sup>              | 36%                 |
| SO <sub>2</sub>   | 1-hour                            | 3                            | 7.9                             | 10.9                               | 655 <sup>2</sup>              | 2%                  |
|                   | 24-hour                           | 0.9                          | 7.9                             | 8.8                                | 105 <sup>2</sup>              | 8%                  |
| CO                | 1-hour (worst case)               | 495                          | 18,400                          | 18,896                             | 23,000 <sup>2</sup>           | 82%                 |
|                   | 8-hour                            | 58                           | 6,778                           | 6,836                              | 10,000 <sup>2</sup>           | 68%                 |
| PM <sub>10</sub>  | 24-hour                           | 3.5                          | 383                             | 386                                | 50 <sup>2</sup>               | <b>770%</b>         |
|                   | Annual                            | 0.35                         | 48                              | 48                                 | 20 <sup>2</sup>               | <b>240%</b>         |
| PM <sub>2.5</sub> | 24-hour                           | 3.5                          | 74.2                            | 77.7                               | 65 <sup>3</sup>               | <b>120%</b>         |
|                   | Annual                            | 0.1                          | N/A                             | N/A                                | 12 <sup>2</sup>               | N/A                 |

<sup>1</sup> Worst case emission impacts were estimated during turbine commissioning or maintenance mode.

<sup>2</sup> State standards

<sup>3</sup> Federal standards

Source: SPPE Section 6.1 (IID2006a).

The project's gaseous emissions of NO<sub>x</sub>, SO<sub>2</sub>, VOC and ammonia can contribute to the formation of the secondary pollutants, ozone and PM<sub>10</sub>. There are air dispersion models that can be used to quantify ozone impacts, but they are used for regional planning efforts where hundreds or even thousands of sources are input into the modeling to determine ozone impacts. No regulatory agency models are approved for assessing single source ozone impacts. However, because of the known relationship of NO<sub>x</sub> and VOC emissions to ozone formation, it can be said that the emissions of NO<sub>x</sub> and VOC from the project have the potential (if left unmitigated) to contribute to higher ozone levels in the region.

Secondary PM<sub>10</sub> formation is the process of conversion of gaseous reactants, or precursors, to particulate compounds. The process of gas-to-particulate conversion is complex and depends on many factors, including local humidity and the presence of other compounds. Currently, there are no agency (U.S. EPA or CARB) recommended models or procedures for estimating nitrate or sulfate formation. Nitrogen oxides first react to form nitric acid, which then reacts reversibly with ammonia to form ammonium nitrate. Sulfur oxides first react to form sulfuric acid, which then react irreversibly to form ammonium bisulfate and ammonium sulfate. Because of the known relationship of NO<sub>x</sub> and SO<sub>2</sub> emissions to secondary PM<sub>10</sub> formation, these emissions, if left unmitigated, will contribute to higher PM<sub>10</sub> levels in the region.

The ammonia emissions from the project come from the SCR system, which controls the NO<sub>x</sub> emissions, as unreacted ammonia or "ammonia slip" that remains in the exhaust after passing through the SCR catalyst system. While the ammonia emissions are recognized as a necessary by-product of the NO<sub>x</sub> control system,

staff still encourages the applicant to control their ammonia slip emissions to the lowest possible extent, while maintaining the guaranteed NOx emission limit. CARB has indicated that districts should consider recommending an ammonia limit of 5 ppm for gas turbines (CARB 1999). This is the level proposed by the applicant and the level expected to be required by the District.

Staff believes that mitigating the project's criteria PM10 and its precursors would mitigate the potential for significant secondary pollutant impacts. The applicant has proposed an offset package that is discussed in the following section.

## Mitigation

### *Ozone Precursors*

The proposed CTG and HRSG would replace the existing Unit 3 boiler at the existing El Centro Generating Station. Because the proposed project is a replacement of the existing Unit 3, staff believes that only the net emission increases and decreases of criteria air contaminants should be addressed. **AIR QUALITY Table 7** lists the expected new emissions from the proposed CTG and HRSG unit, the historical Unit 3 emissions calculated from the last five years of operation, and the net changes of emissions after the proposed project is installed and operated.

**AIR QUALITY Table 7**  
**Estimated Annual Emission Changes Due to Proposed Unit 3 Repower Project**  
**(tons per year [TPY])**

|                             | NOx    | CO     | VOC   | PM10   | SOx   |
|-----------------------------|--------|--------|-------|--------|-------|
| Proposed CTG/HRSG           | 37.18  | 47.51  | 4.79  | 23.40  | 7.52  |
| Historical Unit 3 Emissions | 51.82  | 26.61  | 1.74  | 4.43   | 0.5   |
| Net Emission Changes        | -14.64 | +20.90 | +3.05 | +18.97 | +7.02 |

Note: All proposed and current emissions include emissions from cooling tower.

Source: SPPE Section 6.1 (IID2006a) Table 6.1-24

The project would result in a net decrease of NOx emissions; therefore, no NOx emission offsets are needed. Although there is a net increase in CO emissions, no mitigation is needed because the region is treated as attainment for both the state and the federal CO standards, and that air quality impact analysis shows no direct significant impact as a result of the operation of the proposed facility. As for VOC, however, the project would result in a net emission increase of 3.05 tons per year. Therefore, the applicant proposed to provide 6.10 tons of NOx emission reduction credits that are currently banked with the District to mitigate the project's net emission increase of VOC (IID2006a). These credits, represented by certificate numbers 2030P, 2977P, 4277P, 3055 and 4088P are all owned by the applicant. Staff recommends the adoption of Conditions of Exemption **AQ-SC7** to verify that adequate amount of emission reduction credits would be provided on a timely basis to offset the new ozone precursor emissions generated by the operation of the facility. In addition, staff also recommends the adoption of Condition of Exemption **AQ-SC6** for record keeping and tracking of the project construction and operation.

Staff believes that the proposed emission reduction credits would mitigate the project contribution to the ozone concentration to a level of less than significance.

### ***PM10 and Precursors***

As listed in **AIR QUALITY Table 7**, the proposed project would result in net emission increases of 18.97 tons of PM10 and 7.02 tons of SO<sub>2</sub>. The applicant proposes to mitigate the SO<sub>2</sub> increase with 42.42 tons of banked SO<sub>2</sub> credits (certificate numbers 4279P and 3053A). Only 7.02 tons of the SO<sub>2</sub> credits will be applied to the project SO<sub>2</sub> emissions, leaving 35.4 tons of SO<sub>2</sub> credits to be applied to the PM10 emissions as an interpollutant trade. The applicant proposes to mitigate the 18.97 tons of PM10 emissions with 4.81 equivalent tons of PM10 credits (the value of the 9.62 tons of credits from the El Toro Export PM10 credits (certificate number 4483P) at a distance ratio of 2:1). The remaining 14.16 tons of PM10 emissions would be mitigated with SO<sub>2</sub> credits at an interpollutant trading ratio of 2.5:1 (35.4 tons to 14.16 tons). SO<sub>2</sub> is a reactive, or precursor, compound in the formation of PM10, therefore the use of a SO<sub>2</sub> for PM10 at an interpollutant trading ratio of 2.5:1 for this project and this air basin is acceptable. The project contribution to the area PM10 air quality would be mitigated to a level of less than significance.

### **C. Will the Facility Result in Considerable Cumulative Increase: Less Than Significant with Mitigation Incorporated**

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

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

The applicant, in consultation with the District, has conducted a survey of stationary sources that have potential for emissions of criteria air contaminants within six miles of the project site that are either under construction, or have received permits to be built or operate in the foreseeable future. The survey results indicate that no such sources exist within the six miles radius of the proposed project site. Therefore, no

additional cumulative air quality impact modeling analysis was performed, and no significant cumulative impacts are expected.

**D. Will the Facility Expose Sensitive Receptors to Substantial Air Contaminant Concentrations: Less Than Significant With Mitigation Incorporated**

For purposes of this analysis, sensitive receptors are defined as groups of individuals that may be more susceptible to health risks due to exposure to the project's emissions. Schools (public and private), day care facilities, convalescent homes, parks, and hospitals are of particular concern. The nearest sensitive receptor is identified as the Washington School, located approximately 0.35 mile south of the proposed project location. The nearest residence is located approximately 2,500 feet (0.5 mile) west of the proposed project site (IID 2006a).

**Temporary Construction Emissions**

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

**Operational Emissions**

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

**E. Will the Project Create Objectionable Odors: Less than Significant Impact**

In general, construction activities do not create strong or objectionable odors. There may be minor odors associated with the use or refueling of the diesel and gasoline powered equipment, or from painting or other surface treatments (i.e. building roofing or roadway paving). In addition, the closest residential receptor is located over one-quarter mile from the proposed site and the nearest sensitive receptor is located over three-quarters of a mile from the proposed site, which will allow any objectionable construction odors to disperse substantially before reaching residential or sensitive receptors. No significant impacts are expected from these temporary minor odor sources.

No odor impact is anticipated from the operation of the main power facilities, as no significant emissions of odorous compounds would result from the operation of the gas turbines under normal operations. The odor threshold for ammonia is approximately 5 to 10 ppm, and the stack emissions of ammonia for the gas turbine

exhaust are expected to be limited to 5 ppm on a 1-hour basis. There is the potential for somewhat higher short-term ammonia emission concentrations (i.e. concentration spikes), particularly during startup, shutdown or during load swings. However, after dispersion the maximum ammonia concentrations at ground level will be well below the odor threshold. Odors resulting from accidents could occur; please see the **HAZARDOUS MATERIAL MANAGEMENT** section for further discussion of the consequence analysis of ammonia storage and handling accidents. No significant impacts are expected from the operation of the facility.

## **GREENHOUSE GAS REPORTING**

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In addition to regulated criteria pollutants, the combustion of fossil fuels produces air emissions known as greenhouse gases. These include carbon dioxide, nitric oxide and methane (e.g., unburned natural gas). Greenhouse gases are known to contribute to the warming of the earth's atmosphere. Climate change from rising temperatures represents a risk to California's economy, public health, and environment (CEC 2003). In 1998, the Energy Commission identified a range of strategies to prepare for an uncertain climate future, including a need to account for the environmental impacts associated with energy production, planning, and procurement (CEC 1998, p.5). In 2003, the Energy Commission recommended that the state should require reporting of greenhouse gas emissions as a condition of state licensing of new electric generating facilities (CEC 2003, p. 42). Staff recommends Condition of Exemption **AQ-SC8**, which requires the project owner to report the quantities of relevant greenhouse gases emitted as a result of electric power production. Such reporting would be done in accordance with accepted reporting protocols as specified.

The calculations specified in Condition of Exemption **AQ-SC8** are based on standard protocols developed by the Intergovernmental Panel on Climate Change, an international scientific body that is responsible for developing a common methodology for developing greenhouse gas inventories for all world governments to follow. The calculations are for those emissions associated with on-site fuel storage; all fuel combustion associated with the power plant; and the associated emissions of the on-site power transformer equipment. The greenhouse gas emissions to be reported in Condition of Exemption **AQ-SC8** are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitric oxide (NO) and sulfur hexafluoride (SF<sub>6</sub>) emissions that are directly associated with the production and transmission of electric power.

The Intergovernmental Panel on Climate Change-approved methodology for calculating the greenhouse gas emissions in an inventory is particular to the type of fossil fuel burned. The oxidation factors, fuel-based emission factors and global warming potential factors are established by the Intergovernmental Panel on Climate Change (IPCC) in their Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual (IPCC 1996).

## **CONCLUSIONS**

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- Staff concludes that with appropriate mitigation the proposed El Centro Unit 3 Repower Project would not result in significant air quality impacts.

- The applicant is proposing to fully mitigate all of the project's new emissions with banked emission reduction credits, which would be in place prior to construction of the facility.
- In order to mitigate potentially significant PM10 construction emission impacts, staff recommends the Conditions of Exemption **AQ-SC1** through **AQ-SC5** to mitigate the project's construction equipment emissions and fugitive dust emissions to less than significant levels.
- Staff recommends Conditions of Exemption **AQ-SC6** and **AQ-SC7** to enhance staff ability to verify that all permits and emission reduction credits are properly provided.
- Staff recommends Condition of Exemption **AQ-SC8** to require greenhouse gas reporting.

## **CONDITIONS OF EXEMPTION**

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**AQ-SC1** Air Quality Construction Mitigation Manager (AQCMM): The project owner shall designate and retain an on-site AQCMM who shall be responsible for directing and documenting compliance with conditions AQ-SC3, AQ-SC4 and AQ-SC5 for the entire project site and linear facility construction. The on-site AQCMM may delegate responsibilities to one or more AQCMM Delegates. The AQCMM and AQCMM Delegates shall have full access to all areas of construction on the project site and linear facilities, and shall have the authority to stop any or all construction activities as warranted by applicable construction mitigation conditions. The AQCMM and AQCMM Delegates may have other responsibilities in addition to those described in this condition. The AQCMM shall not be terminated without written consent of the District.

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

**AQ-SC2** Air Quality Construction Mitigation Plan (AQCMP): The project owner shall provide an AQCMP, for approval, which details the steps that will be taken and the reporting requirements necessary to ensure compliance with conditions AQ-SC3, AQ-SC4 and AQ-SC5.

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

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

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

condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

**Verification:** The project owner shall include in the Monthly Compliance Report:

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

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

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

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

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

**Verification:** The project owner shall include in the Monthly Compliance Report (MCR):

- (1) a summary of all actions taken to maintain compliance with this condition,
- (2) copies of any complaints filed with the air district in relation to project construction, and

- (3) any other documentation deemed necessary by the District and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

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

- a) All diesel-fueled engines used in the construction of the facility shall be fueled only with ultra-low sulfur diesel, which contains no more than 15 ppm sulfur.
- b) All diesel-fueled engines used in the construction of the facility shall have clearly visible tags issued by the on-site AQCMM showing that the engine meets the conditions set forth herein.
- c) All construction diesel engines, which have a rating of 100 hp or more, shall meet, at a minimum, the Tier 2 California Emission Standards for Off-Road Compression-Ignition Engines as specified in California Code of Regulations, Title 13, section 2423(b)(1) unless certified by the on-site AQCMM that such engine is not available for a particular item of equipment. In the event a Tier 2 engine is not available for any off-road engine larger than 100 hp, that engine shall be equipped with a Tier 1 engine. In the event a Tier 1 engine is not available for any off-road engine larger than 100 hp, that engine shall be equipped with a catalyzed diesel particulate filter (soot filter), unless certified by engine manufacturers or the on-site AQCMM that the use of such devices is not practical for specific engine types. For purposes of this condition, the use of such devices is "not practical" if, among other reasons:
  - (1) There is no available soot filter that has been certified by either the California Air Resources Board or U.S. Environmental Protection Agency for the engine in question; or
  - (2) The construction equipment is intended to be on-site for ten (10) days or less.
  - (3) The District may grant relief from this requirement if the AQCMM can demonstrate that they have made a good faith effort to comply with this requirement and that compliance is not possible.
- d) The use of a soot filter may be terminated immediately if one of the following conditions exists, provided that the District is informed within ten (10) working days of the termination:
  - (1) The use of the soot filter is excessively reducing normal availability of the construction equipment due to increased downtime for

maintenance, and/or reduced power output due to an excessive increase in backpressure.

- (2) The soot filter is causing or is reasonably expected to cause significant engine damage.
  - (3) The soot filter is causing or is reasonably expected to cause a significant risk to workers or the public.
  - (4) Any other seriously detrimental cause which has the approval of the District prior to the termination being implemented.
- e) All heavy earthmoving equipment and heavy duty construction related trucks with engines meeting the requirements of (c) above shall be properly maintained and the engines tuned to the engine manufacturer's specifications.
- f) All diesel heavy construction equipment shall not remain running at idle for more than five minutes, to the extent practical.

**Verification:** The project owner shall include in the MCR:

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

**AQ-SC6** The project owner shall provide the Energy Commission Compliance Project Manager (CPM) copies of all District issued Authority-to-Construct (ATC) and Permit-to-Operate (PTO) for the facility.

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

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

**AQ-SC7** The project owner shall surrender 6.10 tons of NO<sub>x</sub> emission reduction credits (ERC), 9.62 tons of PM<sub>10</sub> ERC, and 42.42 tons of SO<sub>x</sub> ERC, prior to start of construction of the project.

**Verification:** The project owner shall submit to the CPM a copy of all ERC's to be surrendered to the District at least 30 days prior to start construction.

**AQ-SC8** If the project owner does not participate in the voluntary California Climate Action Registry, then the project owner shall report on a quarterly basis to the CPM the quantity of greenhouse gases (GHG) emitted as a direct result of facility electricity production as follows:

The project owner shall maintain a record of fuel use in units of million-Btus (mmBtus) for all fuels burned on site for the purpose of power production. These fuels shall include but are not limited to: (1) all fuel burned in the combustion turbines, (2) HRSGs (if applicable) or auxiliary boiler (if applicable), and (3) all fuels used in any capacity for the purpose of turbine startup, shutdown, operation or emission controls.

The project owner may perform annual source tests of CO<sub>2</sub> and CH<sub>4</sub> emissions from the exhaust stacks while firing the facility's primary fuel, using the following test methods or other test methods as approved by the CPM. The project owner shall produce fuel-based emission factors in units of lbs GHG per mmBtu of fuel burned from the annual source tests. If a secondary fuel is approved for the facility, the project owner may also perform these source tests while firing the secondary fuel.

| Pollutant       | Test Method   |
|-----------------|---|
| CO <sub>2</sub> | EPA Method 3A                                       |
| CH <sub>4</sub> | EPA Method 18<br>(VOC measured as CH <sub>4</sub> ) |

As an alternative to performing annual source tests, the project owner may use the Intergovernmental Panel on Climate Change (IPCC) Methodologies for Estimating Greenhouse Gas Emissions (MEGGE). If MEGGE is chosen, the project owner shall calculate the CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions using the appropriate fuel-based carbon content coefficient (for CO<sub>2</sub>) and the appropriate fuel-based emission factors (for CH<sub>4</sub> and N<sub>2</sub>O).

The project owner shall convert the N<sub>2</sub>O and CH<sub>4</sub> emissions into CO<sub>2</sub> equivalent emissions using the following IPCC Global Warming Potentials (GWP): 310 for N<sub>2</sub>O (1 pound of N<sub>2</sub>O is equivalent to 310 pounds of CO<sub>2</sub>) and 21 for CH<sub>4</sub>.

The project owner shall maintain a record of all SF<sub>6</sub> that is used for replenishing on-site transformers. At the end of each reporting period, the project owner shall total the mass of SF<sub>6</sub> used and convert that to a CO<sub>2</sub> equivalent emission using the IPCC GWP of 23,900 for SF<sub>6</sub>.

On a quarterly basis, the project owner shall report the CO<sub>2</sub> and CO<sub>2</sub> equivalent emissions from the described emissions of CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub> and SF<sub>6</sub>.

**Verification:** Any greenhouse gas emissions that are reported by the project owner to the California Climate action Registry or pursuant to this condition shall be reported to the CPM as part of the fourth Quarterly or the annual Air Quality Report.

## REFERENCES

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IID2006a – Imperial Irrigation District/J Federowicz (36971) Submittal of the Application for Small Power Plant Exemption (Volumes 1 and 2) for the El Centro Unit 3 Repower Project Dated 05/17/06. Submitted to CEC/B.B. Blevins/M Dyas/Dockets on 05/19/06.

IID2006c – Imperial Irrigation District/El Centro–URS (36971) Submittal of Air Quality Modeling Files CD's Dated May 2006. Submitted to Dockets on 05/19/06.

IID2006e – Imperial Irrigation District/El Centro–URS (36987) Submittal of Application for Authority to Construct El Centro Generating Station unit 3 Repower Project Dated 05/22/06. Submitted to Dockets on 05/22/06.

CEC2006f – CEC/M Dyas (37127) Data Request 1 to 32 for the El Centro Unit 3 Repower Project Dated 06/20/06. Submitted to CEC/Dockets 6/20/06.

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

CEC 2003 - California Energy Commission 2003 Integrated Energy Policy Report. December.

IPCC 1996 - Intergovernmental Panel on Climate Change Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual. September 10, 1996.

# **BIOLOGICAL RESOURCES**

N. Misa Ward

## **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 El Centro Unit 3 Repower Project (project), located at the existing El Centro Generating Station (ECGS) in Imperial 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, specific mitigation planning and compensation measures to reduce potential impacts to less than significant levels.

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

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The applicant will need to abide by the following laws, ordinances, regulations, and standards during project construction and operation as listed in **BIOLOGICAL RESOURCES Table 1**.

**BIOLOGICAL RESOURCES Table 1: Laws, Ordinances, Regulations, and Standards**

| <b>Applicable Law</b>                     | <b>Description</b>   |
|---|--|
| <b>Federal</b>                            |  |
| Federal Endangered Species Act            | Title 16, United States Code, section 1531 <i>et seq.</i> , and Title 50, Code of Federal Regulations, part 17.1 <i>et seq.</i> , designates and provides for protection of threatened and endangered plant and animal species, and their critical habitat.  |
| Migratory Bird Treaty Act                 | Title 16, United States Code, sections 703 through 711, makes it unlawful to take or possess any migratory non-game bird (or any part of such migratory non-game bird) as designated in the Migratory Bird Treaty Act.   |
| Clean Water Act                           | Title 33, United States Code, sections 1251 through 1376, and Code of Federal Regulations, part 30, section 330.5(a)(26), requires the permitting and monitoring of all discharges to surface water bodies. Section 404 requires a permit from the U.S. Army Corps of Engineers for a discharge from dredged or fill materials into waters of the U.S., including wetlands. Section 401 requires a permit from a regional water quality control board for the discharge of pollutants. |
| <b>State</b>                              |  |
| California Endangered Species Act of 1984 | Fish and Game Code, sections 2050 through 2098, protects California's rare, threatened, and endangered species.  |
| California Code of Regulations            | California Code of Regulations Title 14, Division 1, Subdivision 3, Chapter 3 sections 670.2 and 670.5, lists the plants and animals of California that are declared rare, threatened, or endangered.  |
| Fully Protected Species                   | Fish and Game Code, sections 3511, 4700, 5050, and 5515, designates certain species as fully protected and prohibits the take of such species or their habitat unless for scientific purposes (see also California Code of Regulations Title 14, Division 1, Subdivision 3, Chapter 3, section 670.7).   |
| 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.  |
| Migratory Birds                           | 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 birds.  |
| Significant Natural Areas                 | Fish and Game Code section 1930 <i>et seq.</i> designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitat.  |
| Native Plant Protection Act of 1977       | Fish and Game Code section 1900 <i>et seq.</i> designates state rare, threatened, and endangered plants.   |
| <b>Local</b>                              |  |
| Imperial County General Plan              | Imperial County adopted the Conservation and Open Space Element of the County General Plan in 2003. The purpose of the biological resources portion of this element is to conserve   |

|  |  |
|--|--|
|  | <p>environmental resources, including biological resources, while encouraging economic development and growth (Imperial County 2003a). The intent of the document is to ensure that the range of environmental resources (Biological Resources, Cultural Resources, Soils, Minerals, Energy, Regional Aesthetics, Air Quality, and Open Space) available to future generations is not limited. The Noise Element also considers wildlife, such as riparian birds, to be sensitive receptors and as such provides guidance on minimizing noise impacts to both humans and wildlife (Imperial County 2003b).</p> |
|--|--|

**SETTING**

The project site is located within the existing ECGS site, which is located at 485 East Villa Avenue in the city of El Centro in Imperial County. The region has very hot summers and mild winters. It is located in the Salton Trough, which is as much as 105 feet below sea level and extends from the Coachella Valley southward into Mexico. The project site is surrounded by agricultural, developed urban, industrial, and commercial developed areas of the city of El Centro and the Imperial Valley. Agricultural lands in the immediate vicinity contain numerous canals and other drainage systems that provide habitat for sensitive and common wildlife. Approximately 22 miles north is the Salton Sea. Natural desert habitat exists in the East Mesa and the West Mesa/Yuha Desert areas, which are located approximately 17 miles to the east and 12 miles to the west, respectively. The Algodones Dunes, a significant ecological area that supports a number of rare and endemic plants and wildlife, is situated adjacent to the eastern edge of East Mesa. Significant habitat areas in the region include drainages, such as canals, washes and sloughs, as well as lakes and man-made water bodies (e.g. detention basins). These features are part of the New River and Alamo River watersheds. Irrigated agricultural lands also provide aquatic habitat, which birds often temporarily occupy between flights to various natural water features, such as the Colorado River, which is located approximately 50 miles east of the project site.

Due to the variety of land disturbances, much of the natural habitat has been extirpated or greatly reduced in the region. Conversion to agricultural crops and urbanization has fragmented much of the historic habitat and eliminated native species from much of their historical ranges. Although agricultural areas replaced native habitats over a century ago, habitat opportunities for a variety of sensitive species such as the burrowing owl (*Athene cunicularia hypugea*), Colorado River toad (*Bufo alvarius*), California black rail (*Laterallus jamaicensis coturniculus*), Yuma clapper rail (*Rallus longirostris yumanensis*), and razorback sucker (*Xyrauchen texanus*) still exist in the region (IID2006a). These species as well as those with known occurrences near the project are the subject of our analysis. A complete list of the sensitive species that are known to occur within the vicinity of the project site is contained in **BIOLOGICAL RESOURCES Table 2**.

**BIOLOGICAL RESOURCES Table 2**  
**Potentially Occurring Special-Status Species in the Site Vicinity**

| Common Name   | Scientific Name                           | STATUS*         |
|---|---|-----------------|
| <b>PLANTS</b>   |   |                 |
| Chaparral sand-verbena  | <i>Abronia villosa</i> var. <i>aurita</i> | --/--/List 1B.1 |
| Abrams's spurge   | <i>Chamaesyce abramsiana</i>              | --/--/List 2.2  |
| Rock nettle   | <i>Eucnide rupestris</i>                  | --/--/List 2.2  |
| Brown turbans   | <i>Malperia tenuis</i>                    | --/--/List 2.3  |
| Hairy stickleaf   | <i>Mentzelia hirutissima</i>              | --/--/List 2.3  |
| Sand food   | <i>Pholisma sonorae</i>                   | --/--/List 1B.2 |
| <b>MAMMALS</b>  |   |                 |
| Western yellow bat  | <i>Lasiurus xanthinus</i>                 | --/--           |
| Colorado Valley woodrat   | <i>Neotoma albigula venusta</i>           | --/CSC          |
| big free-tailed bat   | <i>Nyctinomops macrotis</i>               | --/CSC          |
| American badger   | <i>Taxidea taxus</i>                      | --/CSC          |
| <b>BIRDS</b>  |   |                 |
| Burrowing owl   | <i>Athene cunicularia hypugea</i>         | --/CSC          |
| Ferruginous hawk  | <i>Buteo regalis</i>                      | --/CSC          |
| Yellow warbler  | <i>Dendroica petechia brewsteri</i>       | --/CSC          |
| Gila woodpecker   | <i>Melanerpes uropygialis</i>             | FE/--           |
| Osprey  | <i>Pandion haliaetus</i>                  | --/CSC          |
| California brown pelican  | <i>Pelecanus occidentalis</i>             | FE/SE           |
| Yuma clapper rail   | <i>Rallus longirostris yumanensis</i>     | FE/ST           |
| Crissal thrasher  | <i>Toxostoma crissale</i>                 | --/CSC          |
| <b>AMPHIBIANS</b>   |   |                 |
| Colorado River toad   | <i>Bufo alvarius</i>                      | --/CSC          |
| Lowland (=Yavapai & San Felipe) leopard frog  | <i>Rana yavapaiensis</i>                  | --/CSC          |
| <b>REPTILES</b>   |   |                 |
| Flat-tailed horned lizard   | <i>Phrynosoma mcalli</i>                  | PFT/CSC         |
| <b>FISH</b>   |   |                 |
| Razorback sucker  | <i>Xyrauchen texanus</i>                  | FE/SE           |
| * Status Legend (Federal/State/CNPS lists, CNPS (California Native Plant Society) list is for plants only):<br>FE = Federally-listed Endangered; PFT = Proposed for Federal listing as Threatened; SE = State-listed<br>Endangered; ST – State-listed Threatened; CSC = California Species of Special Concern; List 1B = CNPS<br>rare or endangered in California and elsewhere; List 2 = CNPS rare or endangered in California, more<br>common elsewhere; CNPS Threat Code Extensions: .1 = Seriously endangered in California, .2 – Fairly<br>endangered in California, .3 – Not very endangered in California; -- = not listed in that category. |   |                 |

Sources: California Natural Diversity Database (CNDDDB 2006), CNPS Online Inventory (CNPS 2006), and IID2006a

## **POWER PLANT FACILITY AND RELATED FACILITIES**

Imperial Irrigation District (IID or applicant) proposes to replace the steam-generating boiler, which currently runs the Unit 3 turbine, with a combined-cycle combustion turbine generator (CTG) and heat recovery steam generator (HRSG). This upgrade would increase Unit 3's output from 44 megawatts (MW) to 128 MW. The new Unit 3 CTG/HRSG and auxiliary equipment would be installed where the former Unit 2 boiler and stack were located, on the west side of the Steam Turbine Building.

The 12.5-acre project site will consist of a 4-acre permanent site for the new Unit 3 and an 8.5-acre temporary site for construction storage and lay-down. The project site contains disturbed native soil and is relatively flat at an elevation of approximately 50 feet below sea level (IID2006a). Because of the flat topography and low rainfall (approximately 3 inches per year), there is little potential for soil erosion.

Stormwater runoff from the property is controlled by structural and non-structural control measures to prevent contamination of stormwater generated at the ECGS site. In the event that precipitation in sufficient amounts to generate runoff occurs, the water drains to one of five impound areas. Although the discharge of stormwater is covered under existing permits, the ECGS personnel indicate that the limited stormwater runoff in the ponds evaporates rather than discharging off-site (IID2006a).

The habitat at the project site consists mostly of disturbed, bare ground. Due to the site disturbances related to the existing power plant facilities, paving and water reservoirs, there are no natural plant communities present. The vegetation that occurs on-site is disturbed or weedy in nature, or consists of ornamental landscaping at the entrance to the existing facilities. Only one native plant species, alkali-mallow (*Malvella leprosa*), was observed. No special-status plants were observed or are expected to occur at the project site. Within 200 feet of the project site, there are no native plant communities. However, there are irrigated alfalfa fields nearby, and these could provide foraging habitat for native bird species.

The developed and disturbed condition, moderate level of human use, and scarce available habitat resources of the site limit its potential to support native wildlife. Species that have adapted to such conditions and were observed, reported, or are expected at the site include house finch (*Carpodacus mexicanus*), house sparrow (*Passer domesticus*), mourning dove (*Zenaida macroura*), rock dove (*Columba livia*), Northern mockingbird (*Mimus polyglottos*), Brewer's blackbird (*Euphagus cyanocephalus*), European starling (*Sturnus vulgaris*), American crow (*Corvus brachyrhynchos*), greater roadrunner (*Geococcyx californianus*), and great-tailed grackle (*Quiscalus mexicanus*). A pair of burrowing owls, a California species of special concern, was observed at a burrow along the southern fence line by URS staff (IID2006a). In addition, on June 21, 2006, Energy Commission staff (staff) found an active burrowing owl burrow under the stairs to the largest fuel oil tank (Number 6) approximately 1,200 feet southeast of the existing power plant buildings. With the exception of the burrowing owl, there are no special-status or native wildlife species that are expected to occur on the site regularly. According to IID staff, other special-status birds have been observed at the project site (IID2006a and IID2006n). For instance, the water reservoirs on-site receive incidental use by the state and federal endangered California brown pelicans (*Pelecanus occidentalis*), presumably during migrations to larger water bodies, such as the Salton Sea. Osprey (*Pandion haliaetus*), a California species of special concern, have also attempted to nest on power poles and been unsuccessful despite IID's attempts to encourage nesting (IID2006n).

## **Natural Gas Pipeline**

The ECGS has an existing Southern California Gas Company (SCGC) high-pressure natural gas pipeline which currently feeds the station. This pipeline would be extended 500 feet within the ECGS boundaries to feed the new Unit 3 CTG/HRSG (IID2006a). The habitat along the construction corridor is similar to that present on the remainder of the project site and consists of disturbed soil with sparse, ruderal vegetation.

## **Water Supply and Use**

The raw water source for the existing ECGS is Colorado River water from IID's Dogwood surface canal Gate 54B, which is part of IID's extensive network of main and lateral canals. Cooling tower make-up water for the existing station comes from this source. An existing demineralization system at the station would produce sufficient high quality make-up water to meet the needs of the new Unit 3 CTG/HRSG (IID2006a). Although no changes in wastewater discharge would be necessitated by the new Unit 3 CTG/HRSG, IID is developing a deep well injection system for disposal of process wastewater for the entire ECGS site, including the Unit 3 repower, in order to comply with their current National Pollutant Discharge Elimination System permit. (IID2006a).

## **Electric Transmission Line**

The existing Unit 3 steam turbine would continue to use its existing overhead connection to the adjacent El Centro switching yard. The new Unit 3 CTG/HRSG would require a new proposed 92-kV overhead interconnection, ranging from 50 to 80 feet in height. This new interconnect would extend approximately 2,350 feet, starting at the high voltage side of the generator step-up, proceeding west via an A-frame structure, then north around an existing maintenance building, then east within the north boundary of the ECGS site, then south to the existing El Centro Switching Station (ECSS). Construction of the new interconnection would not cause any ground disturbance outside the boundaries of the ECGS. In addition, two existing 161-kV wooden-pole lines would be relocated to the east to make room for the new 92-kV interconnect while maintaining required line-to-line clearances (IID2006a).

## 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 or jurisdictional 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 sensitive species listed in **BIOLOGICAL RESOURCES Table 2** are potentially found in the vicinity of the project site, and at least two occupied burrowing owl burrows were found on-site during recent surveys. On March 31, 2005, URS observed a burrowing owl pair along the southern fence line of the site, about 800

feet away from the areas proposed for new construction. Staff visited the proposed project site on June 21, 2006, and made an independent observation of another active burrowing owl burrow under the stairs to the largest fuel oil tank approximately 1,200 feet southeast of the existing power plant buildings. Based on past biological resources reports for the El Centro Unit 2 Repowering Project (90-SPPE-2, CEC 1991), staff suspect there are several additional burrowing owl burrows on the site. Maps from the 1994 burrowing owl monitoring reports completed by IID indicate several burrows near the proposed locations for new facilities. Although burrow locations have likely changed since this time, the exact extent and location of burrows currently on-site are unclear to staff.

The U.S. Fish and Wildlife Service (USFWS) communicated to Energy Commission staff that loud construction noise and vibration could affect burrowing owls (USFWS 2006a). This is consistent with the inclusion of birds as sensitive receptors in the Noise Element of the Imperial County General Plan. Thirty days prior to the start of initial ground disturbance activities, a pre-construction survey for burrowing owls should be completed. If any owls are encountered, measures should be taken to minimize impacts. USFWS (2006b) recommends noise/visual barriers (e.g., haystacks or plywood fencing). An increase in noise levels due to construction could result in the abandonment of a nest or brood, therefore, a noise/visual barrier would provide additional protection. With the setback and noise/visual barriers in place, burrowing owls and their burrows are less likely to be impacted by construction noise and/or vibration. Initial disturbance of the site should also occur outside the burrowing owl breeding season (February 1 through August 30) to ensure that no breeding birds, eggs, or chicks are harmed by construction activities (USFWS 2006a). In addition, because breeding has been known to occur outside the typical season in the Imperial Valley, USFWS recommends that the burrowing owl pairs be monitored during any construction activities, such as pile-driving, that exceed ambient noise/vibration levels.

Other special-status birds which could opportunistically occur at the site include the California brown pelican, Yuma rail, black rail, osprey and ferruginous hawk (*Buteo regalis*). California brown pelicans and ospreys are reported to incidentally occur on the site at the water reservoirs and power poles, respectively (IID2006a). Because neither species is resident on-site, staff concludes that there are no impacts. The potential for the other species to occur on-site is very unlikely because they have not been found during previous surveys and due to the lack of suitable foraging and nesting habitat.

The razorback sucker, a sensitive fish species, is periodically reported as incidental occurrences of entrained individuals from the Colorado River within the IID irrigation water distribution system. The species is regarded as not likely to breed in the IID system, including terminal reservoirs such as those that occur on the project site. These reservoirs will not be subject to construction disturbance and no impacts are expected to any entrained individuals that might be present. In addition, the potential for "take" of this species has been provided for by IID's participation in the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) (IID2006k).

A California species of special concern, the flat-tailed horned lizard (*Phrynosoma mcalli*) is also not likely to be affected by the project. Its presence on the site is very unlikely due to the lack of suitable habitat on site and nearby, which would provide opportunities for translocation.

Other special-status species (**BIOLOGICAL RESOURCES Table 2**) have a low potential to occur on the project site. Suitable habitat is lacking to support these sensitive plants and wildlife. Many of the bird species are transients and will be only present during migration. Staff concludes these other special-status species would not be impacted by the El Centro Unit 3 Repower Project. Native birds are unlikely to nest on the site based on the species observed during the reconnaissance survey (IID2006a).

Staff proposes the following incidental take minimization and avoidance measures:

- Completion of pre-construction surveys prior to ground-disturbing activities to ensure clearance of sensitive species and avoidance of nesting native birds.
- Implementation of environmental awareness training of all construction personnel to recognize sensitive habitat areas and sensitive species.
- Implementation of species-specific measures if burrowing owls are encountered on site or if other sensitive species are found on site during pre-construction surveys that were not previously encountered.
- Burrowing owl species-specific measures include relocation following the California Department of Fish and Game (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 would be constructed around the site for each active burrow used by a wintering or nesting burrowing owl. USFWS also recommends that the construction be scheduled outside the typical breeding season (February 1 – August 30) and that burrowing owl pairs be monitored during any construction activities that exceed ambient noise and/or vibration levels (USFWS 2006a).
- Completion of construction monitoring and compliance reports that analyze the effectiveness of the mitigation measures.

Implementing these mitigation (take minimization and avoidance) measures would reduce potential significant impacts of the proposed project and related linear facilities on sensitive species and are included in staff's Biological Resources Condition of Exemption **BIO-1**. Both CDFG (2006c) and USFWS (2006a) agree with the proposed mitigation measures.

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

Various habitat types exist within five miles of the proposed project site including an intricate system of drainage systems that are part of the Alamo River and New River watersheds. The year-round availability of water and long growing season in the Imperial Valley have promoted and sustained aquatic, marsh, and riparian habitats in the valley. Stormwater runoff from the property is controlled by structural and non-

structural control measures to prevent contamination of stormwater generated at the ECGS site. Stormwater runoff, when it does occur, is expected to be minimal and, the water drains to one of five impound areas. Although the discharge of stormwater is covered under existing permits, the ECGS personnel indicate that the limited stormwater runoff in the ponds evaporates rather than discharging off-site (IID2006a). Moreover, IID's Dogwood surface canal does not contain riparian habitat. Staff, therefore, concludes there will be no impacts to any riparian habitats or other sensitive communities from the construction and operation of the proposed project.

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

The applicant notes that the site does not contain any hydrologic features that would be considered "waters of the United States" including wetlands by the U.S. Army Corps of Engineers (USACE) (IID2006a). According to USACE Regulatory Guidelines, irrigation ditches excavated on dry land, artificial lakes or ponds created by excavating dry land to collect and retain water or serve as settling basins, would not be subject to Section 404 jurisdiction. Therefore, the on-site reservoirs would not be considered waters of the United States or wetlands. Since no wetlands or other Waters of the United States exist on the proposed project site, staff concludes that the construction and operation of the proposed project will not have any impacts on wetlands.

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

At least two active burrowing owl burrows have been observed on the existing ECGS site. Previous monitoring of the site performed for the El Centro Unit 2 Repowering project (90-SPPE-2) revealed more extensive use of the site by burrowing owls. It is reasonable to assume that the site is still used as a breeding ground for at least part of the year. Without the incorporation of mitigation measures, the project could interfere with the movement of resident and migratory wildlife. Implementing the aforementioned mitigation (take minimization) measures included in staff's Biological Resources Condition of Exemption **BIO-1** would result in a less than significant impact.

### **E. Conflict with Local Biological Resource Policies or Ordinances: No Impact**

The Imperial County General Plan (Imperial County 2003) includes a discussion of biological resources. Staff concludes that the proposed project would not conflict with any local biological resources policies or ordinances.

### **F. Conflict with Adopted Habitat Protection Plans: No Impact**

Staff identified the following habitat protection plans in Imperial County which may potentially affect the proposed project.

California Desert Conservation Area (CDCA) – The CDCA was created by the U.S. Department of the Interior to manage 25 million acres of desert habitat located on Bureau of Land Management (BLM) managed public lands (BLM 1980). The goal of the plan is to provide for the use of public lands and resources of the CDCA,

including economic, educational, scientific, and recreational uses, in a manner which enhances whenever possible and does not diminish the environmental, cultural, and aesthetic values of the desert and its productivity. Although the proposed project will be located within the CDCA boundaries, it will be built on private land and therefore not under BLM jurisdiction. Staff concludes the CDCA will not be applicable to this project.

Imperial Irrigation District Habitat Conservation Plan (IID HCP) – The IID HCP is being developed for the water transfer project that is being implemented in its draft form as a permit condition for the State Water Resources Control Board permit that allows for the water transfer with San Diego to proceed. The IID HCP is not complete, however, accomplishments to date include vegetation surveys of drains and desert right-of-ways and avoidance measures for burrowing owls. The general requirements of an Implementation Biologist and Implementation Team are in place. Other mitigation measures are still in the planning phases (USWFS 2006b). Since the applicant has already indicated that they intend to implement mitigation procedures for burrowing owls (IID 2006k), staff concludes that the proposed power plant project will not conflict with the IID HCP.

Flat-tailed Horned Lizard (FTHL) Rangewide Management Strategy – The FTHL Rangewide Management Strategy would provide guidance for the conservation and management of sufficient habitat to maintain existing populations of FTHLs within five management areas located only on BLM managed public lands within Imperial County (FTHLIC 2003). Since the proposed project will be located on private land, and because no FTHLs or suitable habitat have been observed at the project site, this management strategy will not be applicable to the project.

Lower Colorado River Multi-Species Conservation Program (LCR MSCP) - The LCR MSCP is a coordinated, comprehensive, long-term multi-agency effort to conserve and work towards the recovery of endangered species, and protect and maintain wildlife habitat on the lower Colorado River (LCR MSCP 2004). Although the project does not fall within the planning area (LCR MSCP2006), IID is a participant due to their senior water rights for 3.1 million acre-feet per year from the Colorado River (IID2006a). As a participating member of the LCR MSCP, IID provides financial and general support for mitigation measures for razorback suckers that are entrained in their canal system (IID2006k); staff concludes that the proposed project will not conflict with the LCR MSCP.

## **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 project is proposed in an area where sensitive resources such as drainages in the New River and Alamo River watersheds are more than five miles away. Cumulative impacts in an area such as this can have devastating effects since much of the natural habitat no longer exists. The applicant has designed both the construction and

operation of this proposed project to help minimize adverse impacts to biological resources on the project site. The location of the proposed project within an existing power plant facility reduces the need for infrastructure improvements and new linear features, such as long transmission lines or gas lines outside the ECGS site. This also minimizes construction impacts to biological resources. Staff, therefore, concludes that the proposed project will not result in significant cumulative impacts to local sensitive biological resources.

## **CONCLUSION**

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Implementing the following Condition of Exemption will result in less than significant impacts to biological resources.

## **CONDITION OF EXEMPTION**

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### **TAKE AVOIDANCE AND MINIMIZATION MEASURES**

**BIO-1** The project owner shall implement the following measures for the burrowing owl:

1. Complete a pre-construction survey for burrowing owls on the project site and linear facilities no less than 30 days prior to the start of initial ground disturbance activities. If burrowing owls are present within 500 feet of the El Centro Unit 3 Repower Project site or linear facilities (e.g. natural gas line), then the California Department of Fish and Game (CDFG) burrowing owl guidelines (1995) shall be implemented;
2. Monitor burrowing owl pairs within 500 feet of any activities that exceed ambient noise and/or vibration levels;
3. Establish a 500-foot set back from any active burrow and construct additional noise/visual barriers (e.g., haystacks or plywood fencing) to shield the active burrow from construction activities. Post signs (in both English and Spanish) designating presence of sensitive area;
4. 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, and
5. If a burrowing owl is occupying an active burrow within the project site or natural gas pipeline right-of-way and requires passive relocation, mitigation in the form of artificial burrows should be mitigated at a 2:1 ratio. Newly constructed artificial burrows should be installed in an adjacent protected area that provides a minimum of 6.5 acres per pair or solitary owl around the site (CDFG 2006b). Construction and installation of burrows should be done in consultation with CDFG.

For other sensitive species:

1. Complete a pre-construction survey immediately prior to any ground-disturbing activities to ensure clearance of any sensitive species and any/all nesting native bird species. This survey can occur in conjunction with the burrowing owl surveys but must be performed by a biologist qualified to identify the potentially occurring species in **BIOLOGICAL RESOURCES Table 2** and other non-rare, native bird species and their nests;
2. Provide environmental awareness training to all construction personnel to recognize any sensitive species or active nests that are found; and
3. In consultation with the appropriate agency or agencies, implement species-specific avoidance and take minimization measures if a sensitive species is found on site. Measures that could be taken by a qualified biologist could include relocation of an animal or fencing of a plant as advised by CDFG and/or the USFWS.

The project owner shall prepare an end of construction report that discusses sensitive species encountered, monitoring performed, mitigation measures implemented and the success of those measures.

**Verification:** The project owner shall submit a report to CDFG and USFWS at least 14 days prior to the start of site mobilization that describes when surveys were completed, what was observed, mitigation measures and the results of the measures. If artificial burrows need to be installed, the project owner shall coordinate with and report to CDFG on the number of new burrows, their locations and how the new wildlife will be protected for the life of the project. The end-of-construction report shall be provided to the Energy Commission Compliance Project Manager, CDFG, and USFWS at least 30 days prior to commercial operation.

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# CULTURAL RESOURCES

Beverly E. Bastian

## INTRODUCTION

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Cultural resources, as defined in state law, include buildings, sites, structures, objects, and historic districts. The purposes of this cultural resources analysis are to identify and evaluate all potential impacts of the proposed El Centro Unit 3 Repower Project to all significant cultural resources, and to craft mitigation measures (Conditions of Exemption) that would reduce any unavoidable impacts to significant cultural resources to a less than significant level. Under the term “cultural resources,” the California Energy Commission (CEC) includes historic/prehistoric archaeological deposits, the built environment, and ethnic heritage properties.

This cultural resources analysis includes:

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

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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

### STATE

- Public Resources Code, § 5024.1 establishes the California Register of Historical Resources (CRHR) and the criteria for eligibility to the CRHR. It also defines eligible resources.
- Public Resources Code, § 5097.5 identifies any unauthorized removal or destruction of historic resources on sites located on public land as a misdemeanor.
- Public Resources Code, § 5097.99 prohibits obtaining or possessing Native American artifacts or human remains taken from a grave or cairn and defines as a felony the possession of such artifacts with the intent to sell or vandalize them.
- Public Resources Code, § 5097.991 states that it is the policy of the State that Native American remains and associated grave artifacts be repatriated.

- Public Resources Code, § 5097.98 sets procedures for notification if Native American artifacts or remains are discovered. This requires the landowner to rebury Native American remains elsewhere on the property if other disposition cannot be negotiated.
- Public Resources Code, § 21083.2 (CEQA) 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. The criteria for the identification of unique archaeological resources are set forth in this section, which directs that an environmental impact report shall not address nonunique archaeological resources. If a potential for damage to unique archaeological resources can be demonstrated, the lead agency may require reasonable steps to preserve the resource in place. Otherwise, the project applicant is required to fund mitigation measures to the extent prescribed in this section, which discusses excavation as mitigation, limits the applicant’s cost of mitigation, sets time frames for excavation, and defines “unique and non-unique archaeological resources. This section also allows a lead agency to make provisions for archaeological resources unexpectedly encountered during construction, which may require the project applicant to fund mitigation and delay construction in the area of the find.
- Public Resources Code, § 21084.1 (CEQA) indicates that a project may have a significant effect on the environment if it causes a substantial adverse change in the significance of a historic resource. The section defines “historic resource” and describes what constitutes a “significant” historic resource. A lead agency may determine whether a resource is a historical resource for the purposes of this section even if it is not listed on any register or included in any qualifying survey.
- Government Code, § 37361 (b) allows the legislative body of a city to make special provisions for cultural resources identified as having a special character or special historical or aesthetic interest or value.
- California Code of Regulations, Title 14, § 4852 defines the term "cultural resource" to include buildings, sites, structures, objects, and historic districts. It establishes four criteria for significance and defines integrity.
- California Code of Regulations, Title 14, § 15064.5 (CEQA Guidelines) defines the term “historical resources,” explains when a project may have a significant effect on historical resources, describes CEQA’s applicability to archaeological sites, and specifies the relationship between “historical resources” and “unique archaeological resources.” Subsection (d) allows the project applicant to develop an agreement with Native Americans on a plan for the disposition of remains from known Native American burials impacted by the project. Subsection (e) requires the landowner to rebury Native American remains elsewhere on the property if other disposition cannot be negotiated within 24 hours of accidental discovery and required construction stoppage. Subsection (f) requires that the lead agency make provisions for historical or unique archaeological resources accidentally discovered during construction.
- California Code of Regulations, Title 14, § 15126.4(b) (CEQA Guidelines) describes options for the lead agency and for the project applicant to arrive at appropriate, reasonable, enforceable mitigation measures for minimizing significant adverse impacts from a project. It prescribes maintenance, repair, stabilization, restoration,

conservation, or reconstruction as mitigation of a project's impact on a historic building or structure. It discusses documentation as a mitigation measure for a historic building or structure and discusses mitigation through avoidance of damaging effects on any historical resource of an archaeological nature, preferably by preservation in place, or by data recovery through excavation if avoidance or preservation in place are not feasible. Data recovery must be conducted in accordance with an adopted data recovery plan.

- California Health and Safety Code, § 7050.5 makes it a misdemeanor to disturb or remove human remains found outside a cemetery. This code also requires a project owner to halt construction if human remains are discovered and to contact the county coroner.

## **LOCAL**

Imperial County adopted the Conservation and Open Space Element of the County General Plan in 2003. The purpose of the cultural resources portion of this element is to conserve environmental resources, including cultural resources, while encouraging economic development and growth (Imperial County 2003). The Conservation and Open Space Element provides a discussion of cultural resources and their importance to the citizens of Imperial County. The intent of the document is to ensure that the range of environmental resources (Biological Resources, Cultural Resources, Soils, Minerals, Energy, Regional Aesthetics, Air Quality, and Open Space) available to future generations is not diminished.

## **SETTING**

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The location of the proposed El Centro Unit 3 Repower Project is in the northeast area of the City of El Centro. The project site is entirely within the bounds of the existing El Centro Generating Station (ECGS), and the station's buildings, structures, and water-storage ponds surround the project site. Agricultural fields extend to the east and north of the ECGS, residential areas are found to the west, and industrial complexes lie to the south.

The City of El Centro is within the geomorphic province known as the Colorado Desert or as the Salton Trough, at an elevation of about 45 feet below mean sea level (IID2006a:6.4-8; App. C:6). The temperature range is extreme, from over 110°F in the summer to a winter average in the 40s, and the area averages less than three inches of rainfall in a year. The local terrain consists of nearly flat expanses of sandy soil. Native vegetation includes mostly creosote scrub brush, but irrigation makes the intensive cultivation of alfalfa, wheat, and cotton possible over a significant portion of the area (IID2006a: 6.4-8).

The geologic history of the area is dominated by a succession of lakes, formed by the Colorado River intermittently filling the low-lying Salton Trough. In the past 60 million years, these lakes have left 20,000 feet of sediments covering the area (IID2006a: 6.4-8). Lake Cahuilla is the name geologists have given to the most recent lake. At its maximum extent, it was 110 miles long, 32 miles wide, and more than 300 feet deep at the center—three times the area and six times the depth of the Salton Sea (Schaefer

n.d.), which now occupies the deepest part of the basin formerly occupied by Lake Cahuilla. Lake Cahuilla may have formed as long ago as 10,000 years (Deméré n.d.), or as recently as 2,000 years ago (Schaefer n.d.). Once filled, the lake had an immense shoreline whose freshwater marshes and minor embayments supported many plant and animal resources economically useful to Native Americans. The lake's level depended on inflow from the Colorado River compensating for the water lost to evaporation. The last high lakestand was about 400 years ago, after which the desiccation of Lake Cahuilla was probably rapid—possibly requiring less than 60 years to leave the landscape as it is today (Schaefer n.d.). The soils on which the ECGS is built are Lake Cahuilla sediments (IID2006a: 6.6-12). The project site was underwater until about 300 years ago.

Native Americans have lived in the southern California region for at least 14,000 years. The earliest period, called PaleoIndian, is represented archaeologically in the Colorado Desert by San Dieguito sites, dating between 12,000 and 7,000 B.P. (Before the Present), when the climate was cooler and wetter than it is today. These sites evidence Native American lifeways based on living near lakes and using the kinds of foods and materials found in that environment, with the exception of hard seeds. The next period recognized by archaeologists, the Archaic, dates between 7,000 and 3,000 B.P., when climatic warming and drying reduced or eliminated the lakes Native Americans had exploited. Sites representing this period in the Mojave Desert, north of the Colorado Desert, are distinguished by the presence of mortars and pestles and manos and metates, indicating the addition to the Native American diet of the hard seeds of the screwbean and mesquite plants which the changed climate now favored in this area. The kinds of projectile points found in association with hard-seed-grinding implements in the Mojave Desert are found in the Colorado Desert as well, but no seed-grinding tools are found there and very few sites evidencing occupation. Archaeologists have interpreted the paucity of occupation sites in the Colorado Desert as indicative of an abandonment of the area by Native Americans in this period, except for sporadic seasonal use. The Late Prehistoric period, from 3,000 B.P. to 1769 A.D., saw Native Americans re-occupying the Colorado Desert, particularly in the last half of the period, when Ancient Lake Cahuilla was formed and provided a more favorable environment for human occupation. Smaller projectile points indicate the introduction of the bow and arrow, along with both pottery making and agriculture, in the late part of this period (IID2006a: 6.4-9 to 6.4-11).

The Native Americans who lived in the vicinity of El Centro around the time the Spanish arrived, known to anthropologists as the Kamia, had no name for their tribe (Luomala 1978:608). They spoke the same language as the Ipai and Tipai Native American groups (Luomala 1978:592) and occupied a small part of the latter's territory, primarily the Imperial Valley (IID2006a: 6.4-12). It is likely that the Kamia were affiliated with the Tipai, and Kamia may have been simply a name for a band of Tipai (Luomala 1978:592). The Kamia traded foodstuffs with the Southern Diegueño people (also Tipai) who lived in the peninsular ranges to the west of the Colorado Desert. The Kamia also interacted with the Quechan people who resided primarily in the Colorado River Valley and with whom the Kamia shared many traits (IID2006a: 6.4-12).

The semi-sedentary Kamia gathered wild plant foods, hunted small mammals, fished, and practiced agriculture on the shores of Lake Cahuilla. Kamia territory may have

overlapped with that of the Cahuilla, to the north. Historically the Kamia and the Cahuilla did not interact, but because the two groups exploited the same kind of desert environment, Cahuilla subsistence activities are likely to have been similar to those of the Kamia, except that the Cahuilla were less dependent on agriculture. As Lake Cahuilla dried up, the Kamia moved to the western mountains or to locations along the New and Alamo Rivers (IID2006a: 6.4-12).

For Native Americans along the Colorado River, contact with Europeans began in 1540, but for the Kamia, as for all other California Native Americans, contact occurred in and after 1769 (Luomala 1978, p. 594). Even if contact with Europeans, concentrated along the coast, was not face-to-face, interior California Native Americans experienced the effects of that presence through the transmission of deadly European diseases from group to group. Initially, the Tipai and Ipai violently resisted the recruitment efforts of the Spanish missionaries from Mission San Diego. In 1775, 800 Indians attacked and burned the mission, killing its priest and creating the only martyr among the California missions. Despite that early fierce resistance, the mission had 1,405 neophytes living near it in 1779. The Spanish government had jurisdiction over the missions until 1821, when Mexico gained her independence. In 1834, Mexico secularized the missions, and only a few mission Indians secured grants of former mission lands from the Mexican government (Luomala 1978, p. 595).

In 1848, Mexico ceded California to the United States, and in that same year, gold was discovered, causing a dramatic population increase in California. Gold seekers even invaded the mountains of San Bernardino and San Diego Counties (IID2006a: 6.4-15). In 1849, as Dr. Oliver M. Wozencraft passed through the Imperial Valley on his way to the gold fields, he recognized the valley's potential for agriculture and the possibility of running Colorado River water through a gravity canal to irrigate the valley. A U.S. War Department scientific expedition, sent to the Colorado River in 1853, determined that the river had in the past filled the Salton Trough several times, that the extant banks of the river were considerably higher in elevation than the Imperial Valley, and that a canal from the river to the trough could refill the dry lake bed once again. Using scientific information from the expedition, Wozencraft spent years in Washington D.C. trying to persuade Congress to grant him 1,600 square miles of the Imperial Valley so he could reclaim the land by irrigation with Colorado River water. He died in 1887, his dream unrealized (IID2006a: 6.4-15 to 6.4-16; Hendricks 1971).

Wozencraft's plan was revived in the 1890s by Charles R. Rockwood, an engineer. He proposed the construction of a roundabout canal route: from an intake on the Colorado River near Yuma, along an old Colorado River channel called the Rio Alamo running for 50 miles on the Mexican side of the delta, to a U.S. re-entry point at Calexico. Rockwood also envisioned a network of many miles of canals distributing the water throughout the region he grandly named "the Imperial Valley." Rockwood and his partners got control of the needed Mexican land for the canal and finally got financing and canal-building expertise from George Chaffey, a southern California irrigation canal expert. By 1901, the water was flowing, and the first settlers started coming to the valley. After they purchased their land from the government, they had to buy a water right from Chaffey's and Rockwood's California Development Company, entitling them to receive water from the company. Subscribers then had to pay the company for the volume of water they used (IID2006a: 6.4-16 to 6.4-17; Hendricks 1971).

In 1905, an extremely wet year caused the Colorado River to break through the inadequate floodgate the California Development Company had built to regulate the flow of water into the canal. The torrent flooded the Rio Alamo and filled the Salton Trough, creating the Salton Sea. The company tried a variety of measures to force the Colorado River back into its former channel, but to no avail. The Southern Pacific Railroad (SP) threatened a lawsuit because its tracks in the Salton Trough were flooded. The California Development Company was forced to reorganize, with SP men now dominating its board. After two years of Herculean struggle and the expenditure of millions of SP dollars, the river was restored to its former course. SP dissolved its relationship with the canal company and petitioned the federal government for \$3 million to reimburse its costs in turning the river back to the Gulf of California. Twenty-two years later the government awarded SP \$1 million. The present-day Salton Sea is the by-product of that episode of environmental ineptitude (IID2006a: 6.4-17; Hendricks 1971).

Imperial County separated itself from San Diego County in 1907. The Imperial Irrigation District (IID or applicant) was organized in 1911 to acquire the land rights of the defunct California Development Company from SP. IID began buying the mutual water companies that had distribution canals in the area. By the 1920s, IID was able to supply water to over 500,000 acres of arable land. With the Boulder Canyon Act, passed in 1928 and providing for the construction of Boulder (later, Hoover) Dam, Imperial Dam, and the All-American Canal, southwestern farmers and cities at last could expect to control and fully utilize the water of the Colorado River. Since 1942, IID has owned, operated, and maintained the Imperial Dam and the 82-mile-long All-American Canal. Today, IID is the largest irrigation district in the nation (IID 1998c).

The Boulder Canyon Act also proved to be an opportunity for IID to begin providing electrical power to the Imperial Valley. The act required guarantees of repayment of construction costs for the All-American Canal from local users of the canal's water. IID recognized that the power-generating potential of the canal would make it possible for the District to repay those construction costs and at the same time offer lower rates, along with greater reliability, to Imperial Valley power customers, compared to the existing system, the Nevada-California Electric Company. IID signed an agreement with the Secretary of the Interior in 1932 giving the District the right to use the water flow of the All-American Canal, when it was completed, to generate hydroelectric power. Work on the canal began in 1934 and was finished in 1940 (IID 1998b; BLM 1984).

IID first produced power at a diesel-fired generating plant near Brawley in 1936. Between 1941 and 1984, IID completed hydroelectric power-generating stations at the five falling water drops on the All-American Canal. The first generating unit of the ECGS, a steam turbine and accompanying switching station, was built in 1949. Three more units were added in 1952, 1957, and 1968, respectively. Today, IID operates eight hydroelectric generating plants, one generating station, and eight gas turbines (IID 1998b; IID 1990: 4-2).

## **PROJECT FACILITIES**

The ECGS, which the proposed project would modify, is located just northeast of the City of El Centro, in Imperial County. The project Area of Potential Effect (APE) is

limited to the existing station property, bounded on the north by East Villa Road, on the east by Dogwood Road, on the south by East Commercial Avenue, and on the west by a private road and a canal. IID proposes to replace the steam-generating boiler, which currently runs the Unit 3 turbine, with a combined-cycle combustion turbine generator (CTG) and heat recovery steam generator (HRSG). This upgrade would increase Unit 3's output from 44 megawatts (MW) to 128 MW. The new Unit 3 CTG/HRSG and auxiliary equipment would be installed where the former Unit 2 boiler and stack were located, on the west side of the Steam Turbine Building.

The ECGS has an existing Southern California Gas Company (SCGC) high-pressure natural gas line that currently feeds the station. This line would be extended 500 feet within the station's boundaries to feed the new Unit 3 CTG/HRSG (IID2006a: 2-15).

The existing Unit 3 steam turbine would continue to use its existing overhead connection to the existing El Centro Switching Station (ECSS). The new Unit 3 CTG/HRSG would require a new proposed 92-kV overhead interconnection, ranging from 50 to 80 feet in height. This new interconnect would extend approximately 2,350 feet, starting at the high voltage side of the generator step-up transformer, proceeding west via an A-frame structure, then north around an existing maintenance building, then east within the north boundary of the ECGS site, then south to the ECSS. Construction of the new interconnection would not cause any ground disturbance outside the boundaries of the ECGS. In addition, two existing 161-kV wooden-pole lines would be relocated to the east to make room for the new 92-kV interconnect while maintaining required line-to-line clearances (IID2006a: 4-1).

Cooling tower make-up water for the existing station comes from IID's Dogwood surface canal Gate 54B. An existing demineralization system at the station would produce sufficient high quality make-up water to meet the needs of the new Unit 3 CTG/HRSG (IID2006a: 2-16)

No changes in wastewater discharge would be necessitated by the new Unit 3 CTG/HRSG, except that blow-down from the HRSG would be sent to the cooling tower basin for use as a source of make-up water, rather than being discharged, as at present (IID2006a: 2-18).

The foundations (pilings) for the new Unit 3 CTG/HRSG have not yet been specified, but would depend on the recommendations of the Final Geotechnical Report (IID2006a: 2-32). The applicant expects that the foundation construction and pile-driving work would require excavations to a depth of eight feet (IID 2000m: Data Response 36).

## **IMPACTS**

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Below is the Environmental Checklist that identifies potential impacts from the proposed El Centro Unit 3 Repower Project to cultural resources. Following the checklist is a discussion of impacts and an explanation of staff's conclusions.

| <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**

The modifications necessitated by the proposed equipment upgrade, which would be of possible concern regarding cultural resources, are those modifications which could entail either alteration of the existing exterior walls of the Steam Turbine Building (pertinent to issue A in the environmental checklist, above), or ground disturbance (pertinent to issues B and C in the environmental checklist).

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

Besides enclosing the generating equipment, the Steam Turbine Building today holds the offices of the station's managers and staff on its east side. The first construction phase of the Steam Turbine Building was completed in 1949. The reinforced concrete enclosure housed IID's first steam-powered generator, Unit 1, which delivered a nominal 23 MW of electricity to the contemporary ECSS, located just east of the Steam Turbine Building. As demand for electricity increased, IID added three more steam-powered generators, Units 2 (33MW), 3 (44 MW), and 4 (80 MW), in 1952, 1957, and 1968, respectively (IID1990: 4-2). The addition of each new generating unit required enlarging the Steam Turbine Building. This was accomplished by essentially replicating the original Unit 1 building three times, connecting each addition to the south wall of the previous one (Aguilar 2006). Each unit had a boiler and stack (plus other auxiliary equipment) which were located on the exterior west wall of the building, connecting directly through the west wall to each generating unit. The result is a building constructed in four phases but having the appearance of a single building episode with respect to style, plan, materials, and fenestration.

In 1991, IID obtained from the CEC an exemption for a repower project for ECGS Unit 2. A new CTG/HRSG was installed, sited on the north side of the Steam Turbine Building, with the new Unit 2 pipe rack entering the building through the north wall. Like the proposed Unit 3 Repower Project, the Unit 2 repower was staged so that all of the old steam turbines continued to produce power until the new CTG/HRSG was up and running the Unit 2 steam turbine. Then Unit 1 was shut down, and its exterior boiler and stack were removed. (The Unit 1 generator was mothballed, and remains so, but could be repowered if needed.) Finally the

abandoned exterior boiler and stack of Unit 2 were removed as well. The removal of the two boilers left large holes in the west wall of the Steam Turbine Building. These holes, and several openings for abandoned doors, were infilled with reinforced concrete (Aguilar 2006). The removal of the Unit 2 boiler and stack also created the space in which the proposed Unit 3 repower equipment can be installed.

The applicant's architectural historian, Jeremy Hollins, recorded and evaluated the Steam Turbine Building in January, 2006. Although only 75 percent of the building meets the age criterion minimum of 45 years, Hollins recommended that the entire building was eligible for the CRHR under Criterion 1, which requires that a historical resource be associated with events that have made a significant contribution to the broad patterns of our history. Hollins justified his recommendation based on the Steam Turbine Building's association with IID's providing power to the Imperial Valley for over 50 years and on the station's and IID's role in promoting the growth and prosperity of the Valley's agriculture. He also found that the building retains its original integrity of location, design, setting, workmanship, feeling, and association, although its integrity of materials has been somewhat compromised by removing some original elements and adding other elements inappropriate in age (IID2006b: App. D).

Staff considers that, for the purpose of assessing historical significance and integrity, the cultural resource on which Hollins focused is more appropriately categorized as a structure, rather than as a building. Staff views the generating station as a structure which includes an enclosure (the Steam Turbine Building) for some of its equipment, while the rest of the connected and essential equipment that makes up the overall structure was left outside of the enclosure. Staff's differing categorization does not render moot Hollins's recommendation that the Steam Turbine Building is eligible for the CRHR under Criterion 1, but staff differs from Hollins on that issue as well, though not because he addressed only the building.

Staff recommends that the ECGS generating structure, including the Steam Turbine Building, is not eligible for the CRHR under Criterion 1 because it is not importantly associated with power-plant-related events significant within the broad patterns of our history. Hollins couched the facility's significance in terms of the station's and IID's role in promoting Imperial Valley growth. Staff believes that is not the appropriate arena for evaluating the structure's significance. Rand Herbert and Andrew Walters, in addressing, under Criterion 1, the significance of another 1950s-era power plant, explain the issue well:

In considering the impact of this power plant on the local economy, it is necessary to appreciate the property in the context of similar resources. It is in the nature of public utilities, as with public works projects, that the benefits of these improvements are widely distributed. Every power generating facility delivers a useful product to a broad market or serves a useful public purpose, as does every highway, airport, sewer system, hospital, school, and other utility and public works undertakings. Analyzed at face value, every improvement made by a utility or public works agency may be seen as having made an important contribution to the community it serves. These types of properties, however, must be appreciated in the

context of like properties, to avoid trivializing the elements of what constitutes significance for the property type. The question is not whether the ... [power plant] made a useful contribution to the local economy; it obviously did. The question rather is whether the station made a contribution that is significant within the context of other properties of its type (Herbert and Andrew 2006:15).

Hollins did not compare the ECGS to other plants of its era, therefore he did not adequately justify the significance of the generating station under Criterion 1. Staff has not discovered any aspects of the generating station that are unique or distinctive relative to other 1950s-era power plants, nor was the station IID's only power-generating facility or even its first thermal power plant. Consequently, staff cannot accept Hollins's recommendation that the generating station is eligible for the CRHR and is therefore a significant historical resource under CEQA. Because the station is not a significant resource, none of the proposed repower project's impacts on it would be significant, and no mitigation measures would be required.

If the generating station were a significant historical resource, staff's categorization of it as a structure would require a reevaluation of the integrity of the resource, because more than just the building would have to be considered. Regarding the integrity of the structure, staff would have to conclude that the generating station has expanded and changed as a function of utility, not as a consequence of original design, and so the multiple episodes of equipment replacement comprise a loss of the structure's integrity of design, materials, and workmanship. Staff would view this loss of integrity as sufficient to impair the station's ability to convey its character-defining features. Due to loss of integrity, then, the station would not retain whatever historical significance it might have had.

**B. Cause a Substantial Adverse Change in the Significance of an Archaeological Resource: Less Than Significant with Mitigation Incorporated**

Staff has identified eight project construction activities that would involve ground disturbance and thus potentially impact archaeological resources. The potential of these eight activities to significantly impact as yet unknown archaeological resources depends on three factors: the vertical and horizontal extent of the excavations associated with the activities, the existence and/or possibility of archaeological sites in the area, and the integrity of the native soils at the project site. The ground-disturbing activities are (IID2006a: 2-34 to 2-35; 4-1):

1. Replacing up to six feet of fill over the entire area where the foundations of the new CTG/HRSG would be constructed, per the recommendations of the geotechnical report (IID2006a: App. C, p. 9 );
2. Building the foundations for the new CTG/HRSG and auxiliary equipment;
3. Removing two existing Unit 2 fuel oil tanks;
4. Relocating two electrical duct banks that currently cross the project site;
5. Building a new natural gas fuel line;

6. Relocating the poles supporting two existing 161-kV transmission lines to allow adequate separation between the 161-kV circuits and the new 92-kV interconnect;
7. Building the new 92-kV interconnect from the new Unit 3 CTG generator step-up transformer to the ECSS; and
8. Maintaining a laydown and parking area in the northwest corner of the site.

Activity 1 has the potential to impact as-yet-unknown cultural resources at both an off-site borrow area and an off-site clean soil disposal area, if those locations have not previously been disturbed and have not been surveyed for cultural resources.

Activities 2, 3, 4, and 5 are limited to the area where the new repower equipment would be installed. The geotechnical study (discussed in more detail below) indicated that the surface of this area consists of five to six feet of fill from an unknown source, but that native soils underlie the fill (IID2006a: App. C, p. 4). Thus, the horizontal extent of ground disturbance in this area could not impact any intact archaeological deposits, but excavations in this area to a depth greater than six feet could possibly impact intact, buried archaeological deposits.

Activities 6 and 7 entail linear routes whose horizontal extent would be limited to areas around pole locations, but whose vertical extent (intended depths unknown) could reach native soils. No geotechnical data are available for the routes of these linear facilities, so it is not known if fill exists along these routes, and if so, how deep it goes. Thus these construction and relocation activities have the potential to impact intact, buried archaeological deposits

Activity 8 has potential for ground disturbance to a great extent horizontally, but to only a minor extent vertically. Again, no geotechnical data indicate the extent, if any, of fill in this area, but the archaeological survey (discussed in more detail below) found no surface indications of resources in this area. Thus, because there are no surface archaeological deposits in the area of Activity 7 and because the activity would have little vertical extent, this activity has no potential to impact either known surface sites or intact buried archaeological deposits.

Regarding the existence or possibility of archaeological deposits in the project area, in 1990, at the time of the Unit 2 repower, a cultural resources record search returned no known archaeological or historic sites within one mile of the ECGS (IID 1990: 5-16). The applicant's literature search in 2005 focused on an area of ½-mile radius around the ECGS. No cultural resources were identified in this area in the records of: the Southeastern Information Center (SIC) (part of the California Historic Resources Information System—CHRIS); the Imperial Valley College Desert Museum (IVCDM); the Office of Historic Preservation's website for California Historical Landmarks (CHL); or the National Park Service's database for the National Register of Historic Places (NRHP) (IID2006a: 6.4-18). The applicant notes, however, that substantial archaeological research has not been conducted in the Colorado Desert, where the ECGS is located (IID2006a: 6.4-9).

Another source of potential information on cultural resources in the area is local Native Americans. In 1991, as part of the process of IID obtaining from the CEC an exemption for their Unit 2 repower project, a Kumeyaay elder inspected the station site and identified nothing of concern to Native Americans (CEC 1991: 20). As part of the present application process, the applicant contacted the Native American Heritage Commission (NAHC) on December 15, 2005, and obtained from that agency the information that no known sacred lands are located near the project site and a list of Native Americans concerned about Native American cultural resources in the area. On December 27, the applicant sent letters to the Native Americans on the list, informing them of the project and asking for information on any cultural resources known to the Native Americans. By May 17, 2006, the applicant had received no responses (IID2006a: 6.4-18).

On May 24, 2006, staff requested from the NAHC a current list of representatives of the Native American community who wish to be contacted regarding construction activities in Imperial County. On May 31, 2006, staff sent letters to all persons on the NAHC list informing them of the project and asking them to contact staff or the CEC Public Adviser if they wanted to raise any concerns about cultural resources. To date, neither the Public Adviser's Office nor staff has received any responses.

Another means of identifying cultural resources entails the physical survey of the project area by qualified archaeologists. In 1991, at the time of the Unit 2 repower, an archaeological field survey of the ECGS site was conducted but identified no archaeological deposits (CEC 1991: 20). A more recent reconnaissance was made on November 16, 2005, when the applicant's consulting archaeologists, Diane Douglas and Kevin Mock, conducted an archaeological survey. On the ECGS site, little or no vegetation was present, so ground visibility was 95 to 100 percent. Surface soils were noted to be greatly disturbed from previous construction activities, and no archaeological sites were observed, but the archaeologists identified one historic building, the IID Steam Turbine Building, constructed in 1949 (discussed above). Additionally, on February 21 and 22, 2006, the applicant's archaeologists surveyed four adjacent parcels which IID was considering as parking and laydown areas, but found no cultural resources there, either (IID2006a: 6.4-19).

The report of the geotechnical study conducted for the applicant provided information on both the possibility of buried archaeological deposits and the integrity of the site's native soils. The study found five to six feet of undocumented fill in the area of the proposed equipment foundations (testing was limited to this area), and native lacustrine (lake-deposited) sediments down to 100 feet (IID2006a: App. C, p. 4; Fig. 2). While these data do not address the condition of native soils along the routes of the new and to-be-relocated on-site overhead interconnection lines, for the equipment installation area they indicate that native soils, where buried archaeological deposits could exist undisturbed, would not be reached until excavations go below six feet in depth.

The geotechnical report's Appendix B presents graphs of two cone penetrometer soundings to 100 feet below grade and logs of five borings to 60 feet below grade. An archaeologist did not observe these tests, but after a review of the stratigraphic findings, staff observed that none of the tests revealed soil elements suggestive of

cultural deposits. However, because the geotechnical study made only seven small holes over a very limited area, the geotechnical evidence does not eliminate the possibility that archaeological deposits could exist in the native soils below any fill over the entire ECGS site.

The conclusion, then, from two literature searches, two field surveys, and two rounds of consultation with Native Americans is that there are no archaeological sites in the project area, so the proposed project would have no impacts on **known** archaeological resources.

Regarding the possibility of encountering **previously unknown** intact subsurface archaeological deposits during construction, the geotechnical study indicates that non-native fill soils in the primary impact area of the proposed repower project preclude the existence of intact archaeological deposits until project-related excavations reach a depth of at least five feet in that area. The geotechnical study, however, provides no information on the presence or depth of fill in other parts of the ECGS site, so intact subsurface archaeological deposits could exist at even shallow depths along the linear routes of the new 92-kV interconnect and the two existing 161-kV lines that are to be relocated. The lack of surface indications of archaeological deposits on the ECGS site is, in part, explained by the geotechnical study's documentation of five to six feet of fill in at least one area. So, although the absence of archaeological evidence over the entire ECGS site might suggest there would be little likelihood of encountering previously unknown archaeological deposits during construction work, because archaeological research in this region has been sparse, the possibility cannot be deemed nonexistent.

The applicant has concluded that the potential for encountering buried archaeological deposits during the installation of the proposed repowering equipment and construction of the accompanying natural gas pipeline and electrical interconnection line is unknown (IID2006m: Data Response 36). Consequently, in accordance with the CEQA provision for historical or unique archaeological resources that are discovered during project construction (PRC Section 15064.5 (f)), the applicant has proposed a number of measures intended to mitigate any significant impacts to potentially significant archaeological resources, in the event that any are discovered during construction. These measures include:

- Having the project owner require the Engineering Procurement Construction Contractor (EPCC) to utilize a commercial borrow site and a commercial clean soil disposal site and provide the CPM with the site location(s) and any cultural resources survey data on the chosen site(s) (IID 2006m: Data Response 35).
- Implementing crew training that would address archaeological resources, regulatory protections afforded those resources, procedures relating to designated culturally sensitive areas, access restriction to these areas, prohibition on collecting artifacts, and the need to notify a construction supervisor if cultural remains are uncovered (IID2006a: 6.4-24);
- Archaeological monitoring of native soil removal (IID 2006m: Data Response 36), but not monitoring by Native Americans (IID 2006a:6.4-24);

- Modifying the project design to avoid a potentially significant newly discovered resource (IID2006a: 6.4-23);
- Fencing off a potentially significant newly discovered resource and redirecting construction equipment and personnel away from the area, if the resource cannot be avoided (IID2006a: 6.4-23);
- Contacting an archaeologist who meets the Secretary of Interior standards to assess the potentially significant newly discovered resource and make a determination of the resource's significance (IID2006a: 6.4-24);
- Undertaking further archaeological work to assess the importance/significance of the resource prior to the project continuing with construction in that area (IID2006a: 6.4-24); and
- Having the "Project Archaeologist" (presumably the qualified person contacted to assess the potentially significant newly discovered resource) consult with the CEC to devise mitigation measures to be carried out by the applicant (IID2006a: 6.4-25).

In general, staff concurs with the applicant's proposed mitigation measures, but expands upon them to ensure that impacts to archaeological discoveries would be mitigated to a less than significant level. Staff's proposed mitigation measures for cultural resources are provided as Conditions of Exemption included at the end of this Initial Study section. While Imperial County would be the lead agency for this project, the applicant desires that the CEC undertake the responsibility of compliance review for the cultural resources Conditions of Exemption (IID2006p).

The Conditions of Exemption **CUL-1** through **CUL-5** require that the applicant develop procedures to address mitigation for impacts to any newly discovered significant resources. If any newly discovered archaeological resources are determined to be significant and avoidance is not possible, then data recovery and curation would be required to ensure that significant impacts to the resources are fully mitigated. **CUL-6** requires the project owner to ensure that the project would use only commercial borrow and clean soil disposal sites.

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

There is no record of interred human remains that could be disturbed by the proposed project. If interred human remains should be encountered during project ground disturbance, state law provides protocols that would reduce the project's impact on such remains to less than significant. Under state law, the county coroner must be notified if human remains are found. If the county coroner determines that the remains are Native American in origin, the NAHC would be notified. The NAHC would designate a Most Likely Descendant (MLD), who could make recommendations to the property owner regarding the appropriate treatment of the remains and associated grave goods.

Staff recommends through Conditions of Exemption **CUL-1** and **CUL-4** that a Native American monitor be retained to monitor continuing excavation if Native American artifacts are discovered during ground disturbance at the ECGS. If Native American

human remains should be encountered, the NAHC advises that a Native American monitor should not serve as an MLD, but would be of assistance in handling the discovery appropriately.

## **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 settings of historic structures are affected by other projects in the same area.

At present, seven development projects are planned in locations within one mile of the ECGS. These include (IID2006a: 6.2-5):

1. 8th Street Industrial Park, an industrial/multifamily project;
2. Imperial Plaza, a commercial project;
3. Town Center, a commercial project;
4. Wal-Mart, a commercial project;
5. Northgate, a commercial project;
6. Rancho Imperial, a residential project; and
7. Victoria Ranch, a residential project.

Proponents for these and future projects can mitigate impacts to as yet undiscovered subsurface archaeological sites to less than significant levels 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 the protocols established in state law. Since the impacts from the El Centro Unit 3 Repower Project would be mitigated, if impacts from the proposed residential and commercial development can be mitigated, the incremental effect would not be cumulatively considerable.

## **CONCLUSIONS**

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Staff concludes that two of the CEQA checklist items for cultural resources would be considered “less than significant with mitigation incorporated,” while one checklist item would be considered to have “no impact.” Based on the discussion and analysis above, and in conjunction with the mitigation measures set forth and agreed to by the applicant and staff, the proposed project would cause no significant adverse impact to any known significant cultural resource. Potential impacts to archaeological resources that may be discovered during ground disturbance would be mitigated to a less than significant level 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 Resources Monitors (CRMs) and technical specialists, if needed, to assist in monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS obtains the services of Native American Monitors (NAMs), if needed, per the requirement in the monitoring Condition of Exemption for this project. The project owner shall ensure that the CRS makes recommendations for any cultural resources that are newly discovered or that may be affected in an unanticipated manner regarding eligibility to the California Register of Historic Resources (CRHR). No ground disturbance shall occur prior to CEC Compliance Project Manager (CPM) approval of the CRS, unless specifically approved by the CPM.

### **CULTURAL RESOURCES SPECIALIST (CRS)**

The resume for the CRS and alternate(s) shall include information demonstrating that he or she meets the minimum qualifications specified in the U.S. Secretary of Interior Guidelines, including the minimum qualifications for a specialization in prehistoric archaeology, as published in the Code of Federal Regulations, 36 CFR Part 61. 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 or archaeology; and
2. At least three years of archaeological 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 resources tasks that must be addressed during ground disturbance, grading, construction, and operation.

### **CULTURAL RESOURCES MONITOR (CRM)**

CRMs shall have the following qualifications:

1. a BS or BA degree in anthropology, archaeology, historical archaeology, or a related field, and one year experience monitoring in California; or
2. an AS or AA degree in anthropology, archaeology, historical 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, historical archaeology, or a related field, and two years of monitoring experience in California.

## **NATIVE AMERICAN MONITORS (NAMS)**

Informational lists of interested Native Americans and guidelines for Native American monitoring can be obtained from the Native American Heritage Commission (NAHC). Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area to be monitored. If more than one group of Native Americans claim traditional ties to an area and wish to provide a monitor, then Native American monitoring can be organized (e.g., part-time or rotating) to allow participation by all concerned Native American groups.

## **CULTURAL RESOURCES TECHNICAL SPECIALISTS**

The resume(s) of any additional technical specialists, e.g., historical archaeologist, historian, architectural historian, physical anthropologist, shall be submitted to the CPM.

**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 CPM.

At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of the CRS, the project owner shall submit the resume of the proposed new CRS to the CPM for review and approval.

At least 20 days prior to ground disturbance, the CRS shall provide resumes of anticipated CRMs for the project at least five days prior to the CRM beginning on-site duties. If additional CRMs are retained during the project, the CRS shall provide additional resumes. At least 10 days prior to beginning their tasks, the resume(s) of any technical specialists shall be provided to the CPM for review and approval.

At least 10 days prior to the start of ground disturbance, the project owner shall confirm in writing to the CPM 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 CPM with maps and drawings showing the footprint of the power plant and all linear facilities. The CPM shall review the submittals and in consultation with the CRS approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to the CPM's approval of maps and drawings, unless specifically approved by the CPM.

At a minimum, the CRS and CPM shall receive weekly updates via e-mail from the project construction manager to confirm area(s) to be worked during the next week, until ground disturbance is completed.

**Verification:** 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 the CPM for review and approval. Each week during ground disturbance, a current schedule of anticipated project activity shall be provided to the CRS and CPM by letter, email, or fax.

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

1. The CRS writes a research design for use in evaluating the significance of discovered/recovered archaeological data. The research design shall include a discussion of research questions and testable hypotheses (prehistoric and historic), specifically applicable to the project area, and a statement of artifact collection, retention/disposal, and curation policies, as indicated by the research questions formulated in the research design. A prescriptive treatment plan may be included in the research design for limited resource types.
2. 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 a review of applicable laws, photos of artifacts that might be encountered in the local area, instruction that the CRS, the alternate CRS, and the CRMs have the authority to halt construction in the event of the discovery of a cultural resource, and instruction that employees are to halt work on their own in the vicinity of a cultural resources discovery and to contact their supervisor and the CRS.
3. All cultural resources encountered during project ground disturbance are recorded on a Department of Parks and Recreation (DPR) 523 form and mapped (may include photos). In addition, all archaeological materials collected pursuant to the research design and resulting from all archaeological investigations (survey, testing, and data recovery) shall be curated in accordance with State Historical Resources Commission "Guidelines for the Curation of Archaeological Collections," in an appropriate facility. Copies of any DPR forms shall be provided to the California Historical Resources Information System (CHRIS) and to the CPM.
4. A final Cultural Resources Report (CRR) is written by the CRS in the Archaeological Resource Management Reports (ARMR) format (OHP 1989). The CRR shall report on all field activities including dates, times and locations, findings, samplings and analysis. All survey reports, 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 reports were previously sent to the CHRIS, then the titles of the previous reports must be listed in the CRR. Copies of the CRR shall be provided to the State Historic Preservation Officer (SHPO), the CHRIS, and the curating institution (if archaeological materials were curated).
5. 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.

No ground disturbance, grading, or construction shall occur prior to CPM approval of the research design unless specifically approved by the CPM.

**Verification:** At least one week prior to initiating ground disturbance, the project owner shall provide a letter to the CPM stating the project owner's intention to comply with each of the five elements of this condition, addressing each individually, with details on how compliance will be accomplished.

At least one week prior to beginning ground disturbance, the project owner shall submit the research design, prepared by the CRS, to the CPM for review and approval.

At least one week prior to beginning ground disturbance, the project owner shall submit the name and contact information for a curation facility meeting the standards and requirements for the curation of cultural resources set forth at Title 36 of the Federal Code of Regulations, Part 79.

Within 90 days of the completion of site mobilization, ground disturbance, grading, construction, and landscaping, the project owner shall submit the CRR to the CPM for review and approval. The project owner shall provide documentation to the CPM verifying that copies of the CRR have been provided to the SHPO, the CHRIS, and the curating institution (if archaeological materials were curated).

**CUL-4** The project owner shall ensure that the CRS, alternate CRS, or CRMs shall monitor ground disturbance full-time wherever excavation exceeds five feet in depth in the area where the new CTG/HRSG is installed, once, and shall continue monitoring until excavations are completed. Full-time monitoring shall also be conducted during the construction of the new 92-kV interconnect and during the relocation of the two existing 161-kV transmission lines. Monitoring shall continue until a newly discovered cultural resource is successfully avoided or data recovery and collection pursuant to the research design has been completed to the satisfaction of the CPM. Full-time archaeological monitoring is defined as archaeological monitoring of all earth-moving activities on a construction site for as long as the activities are ongoing. In the event that the CRS determines that full-time monitoring is not necessary in certain locations, a letter or e-mail providing a detailed justification for the decision to reduce the level of monitoring shall be provided to the CPM for review and approval at least 24 hours prior to any reduction in monitoring.

CRMs shall keep a daily log of any monitoring or other cultural resources activities, and the CRS shall prepare a weekly summary report on the progress or status of cultural resources-related activities, including periods during which monitoring has been suspended. The CRS may informally discuss cultural resources monitoring and mitigation activities with the CPM.

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, the project owner shall direct the CRS to engage one or more NAMs as soon as possible to monitor ground-

disturbing activities in the area where the artifacts were found. Native American monitoring shall continue until culturally sterile soils, as determined by the CRS, are encountered in the areas where Native American artifacts were found and during any data recordation or recovery of Native American cultural materials.

**Verification:** During the ground disturbance, grading, and construction phases of the project, the project owner shall ensure that the CRS provides to the CPM copies of the weekly summary reports prepared by the CRS regarding project-related cultural resources monitoring. Each report shall be provided at the beginning of the week following the monitoring covered in the report. Copies of monitors' daily logs shall be retained and made available for audit, if the CPM requests the information.

Within 24 hours of seeking and obtaining the services of a qualified NAM, the project owner shall notify the CPM. If efforts to obtain the services of a qualified NAM are unsuccessful, the project owner shall immediately inform the CPM regarding the status of Native American monitoring on the project. The CPM may resolve the issue by allowing the project to proceed without a Native American monitor.

**CUL-5** 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. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS.

In the event that exceptional cultural resources or cultural resources greater than 50 years of age are found or impacts on such resources can be anticipated, construction shall be halted or redirected in the immediate vicinity of the find or impact and shall remain halted or redirected until all of the following have occurred:

1. The CRS has notified the project owner, and the CPM 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. Notice to the CPM must include a description of the discovery (or changes in character or attributes of a known cultural resource), the action taken (i.e. work stoppage or redirection), a recommendation of eligibility, and recommendations for mitigation of significant impacts, whether or not a determination of significance has been made;
2. The CRS has completed field notes, measurements, and photography for a Department of Parks and Recreation (DPR) 523 primary form. The "Description" entry of the 523 form shall include a recommendation on the significance of the find. The project owner shall submit completed forms to the CPM.
3. The CRS and the project owner have consulted with the CPM, and the CPM has concurred with the recommended eligibility of the discovery and

approved the CRS's proposed data recovery, if any, including the curation of the artifacts, or other appropriate mitigation; and

4. Any necessary data recovery and mitigation have been completed.

**Verification:** At least 15 days prior to the start of ground disturbance, the project owner shall provide the CPM and the CRS with a letter confirming that the CRS, alternate CRS, and CRMs have the authority to halt construction activities in the immediate vicinity of a cultural resources discovery, and that the project owner shall ensure that the CRS notifies the CPM 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. For discovered cultural material aged 50 years or older, or of exceptional character, the project owner shall submit completed DPR 523 forms to the CPM for review and approval no later than 48 hours following the notification of the CPM, or 48 hours following the completion of data recordation/recovery, whichever is more appropriate for the subject cultural materials.

**CUL-6** The project owner shall require the Engineering Procurement Construction Contractor (EPCC) to utilize a commercial borrow site and a commercial clean soil disposal site.

**Verification:** At least 15 days prior to beginning ground disturbance relating to soil removal (per the recommendations of the geotechnical study), the project owner shall provide the CPM with a letter indicating that the EPCC has chosen commercial borrow and clean soil disposal site(s). The project owner shall also provide the CPM with the site location(s) and any cultural resources survey data on the chosen site(s).

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# ENERGY RESOURCES

Geoff Lesh and Steve Baker

## INTRODUCTION

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The Energy Resources section examines energy use by the El Centro Unit 3 Repower Project to ensure that the El Centro Unit 3 Repower Project's (project) 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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Imperial Irrigation District (IID or applicant) proposes to repower an existing steam-generating unit within the site of the existing El Centro Generating Station (ECGS) located at 485 East Villa Avenue, in El Centro, Imperial County, California. The Unit 3 repower will replace an existing boiler with a General Electric Frame 7EA dry low  $\text{No}_x$  combustion turbine generator and heat recovery steam generator to supply steam to the existing steam turbine generator. Most of the existing Unit 3 plant systems will continue to be used with only minor modifications. An evaporative cooler will be used to cool the turbine inlet air to maintain output and efficiency during periods of high ambient temperatures. The existing steam turbine is being modified to handle the increased steam flow to be made available by the exhaust of the combustion turbine. It is anticipated that this modification will result in the steam turbine mechanical output rating being increased from 44 megawatts (MW) to 48 MW. The Project is designed for full-load and part-load operation. Similarly, the plant is also designed for intermediate cycling duty with multiple starts per week if needed.

The Unit 3 repower will increase the existing Unit 3 generating capacity by 84 MW from 44 MW to 128 MW. (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.)

# IMPACTS

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## BACKGROUND

IID is applying for a Small Power Plant Exemption (SPPE) in order to exempt the El Centro Unit 3 Repower Project 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 (and power increases 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, El Centro Unit 3 Repower Project 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 El Centro Unit 3 Repower Project will burn natural gas at a nominal rate up to 1039 million Btu (MMBtu) per hour Higher Heating Value (HHV) (IID2006a, SPPE § 2.2, Table 2.2-1). 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 42.1 percent HHV with the combustion turbine operating at full load (IID2006a, SPPE § 3.1).

The applicant has described its source of natural gas for the El Centro Unit 3 Repower Project (IID2006a, SPPE §§ 1.2., 2.2.6). The project will burn natural gas delivered to

the site by Southern California Gas Company (SCGC) via an existing connection to SCGC's gas transmission line that comes onto the project site (IID2006a, SPPE §§ 1.2, 2.2.6). The SCGC system is capable of delivering the required quantity of gas to the El Centro Unit 3 Repower Project. Furthermore, SCGC 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 El Centro Unit 3 Repower Project could pose a substantial increase in demand for natural gas in California.

Natural gas fuel will be supplied to the site via two pipelines, of 10 and 12 inch diameter, running south from the SCGC Niland regulating station to the ECGS. (IID2006a, SPPE §§ 2.13). This interconnection can be expected to adequately serve the project. There is no real likelihood that the El Centro Unit 3 Repower Project will require the development of additional energy supply capacity.

## **COMPLIANCE WITH ENERGY STANDARDS**

No standards apply to the efficiency of the El Centro Unit 3 Repower Project.

## **ALTERNATIVES TO REDUCE WASTEFUL, INEFFICIENT AND UNNECESSARY ENERGY CONSUMPTION**

The El Centro Unit 3 Repower Project 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 power for IID's customers (IID2006a, SPPE § 1.2.2, 2.1, 2.5, 2.5.1, 7.1). The El Centro Unit 3 Repower Project will be configured as a combined-cycle power plant, in which electricity is generated by a natural gas-fired gas turbine generator combined with an existing steam turbine generator (IID2006a, SPPE §§ 1.2.2, 2.5, 2.5.1, 3.1). This configuration is well suited to providing base-load power where the power demand is relatively steady and short start-up and ramping capability are not essential.

### **Equipment Selection**

Modern gas turbines embody the most fossil-fuel-efficient electric generating technology available today. The applicant will employ a General Electric Frame 7EA dry low-No<sub>x</sub> gas-fired turbine generator (IID2006a, SPPE §§ 2.5, 2.5.1, 3.1, Table 2.5-1, Appendix 6.1). Although there are more efficient gas-fired turbines than the Frame 7EA gas-fired turbine on the market, it nonetheless is an appropriate choice for use on this project. Because it is desired that this gas turbine provide heated exhaust to generate steam for an existing steam turbine generator, the heat requirements for the steam generator are

predetermined. The choice of this gas turbine provides the size needed as exhaust heat is just adequate for steam generation. The low-No<sub>x</sub> version of this machine is nominally rated at 80 MW and 42.1 percent efficiency HHV at ISO<sup>1</sup> conditions (GTW 2005).

While the Frame 7EA is not the most fuel efficient available today for simple-cycle service, its lower-than-maximum efficiency results in a higher exhaust temperature than more efficient gas turbines. For a combined-cycle configuration such as this project, the higher exhaust temperature aids in steam production needed to drive the steam cycle. This results in increased efficiency for the steam-cycle portion of the combined-cycle. Any difference from other candidate machines in actual operating efficiency will be relatively insignificant, in the combined-cycle configuration proposed. Other factors such as generating capacity, cost, and ability to meet air pollution limitations while providing for combined cycle steam generation are some of the factors considered in selecting the turbine model. Energy Commission staff (staff) believes IID has selected a machine that provides optimum fuel efficiency while satisfying the project's objectives. A comparison of the ISO efficiency for the current as well as proposed configurations is shown in **Efficiency Table 1** below.

**Efficiency Table 1**  
**EI Centro Unit 3 Generating Efficiency**

| Configuration  | Generating Capacity (MW) | ISO Efficiency (HHV) |
|--|--------------------------|----------------------|
| Current operating<br>(Boiler with steam turbine)                           | 44                       | 29.7%                |
| Proposed Unit 3<br>Repower Project<br>(7EA gas turbine with steam turbine) | 128                      | 42.1%                |

Source: (IID2006q)

The Unit 3 Repower Project will result in a 42 percent increase in fuel efficiency, making it comparable to the GE LM6000, one of the most efficient peaking units currently in service.

## **Efficiency of Alternatives to the Project**

### **Alternative Generating Technologies**

The applicant addresses alternative generating technologies in its application (IID2006a, 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,

<sup>1</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).

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 customers, where operating costs are critical in determining the economic efficiency of a power plant, IID 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 IID 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>2</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.

El Centro Unit 3 Repower Project proposes to employ evaporative cooling to cool the combustion turbine inlet air (IID2006a, SPPE § 2.2.2.2). Given the hot, dry 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 (combined-cycle) and generating equipment (Frame 7EA gas turbine) chosen appear to represent an effective means of satisfying the project objectives. Staff believes the El Centro Unit 3 Repower Project 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.

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<sup>2</sup> A gas turbine's power output decreases as ambient air temperatures rise.

## **CUMULATIVE IMPACTS**

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

Staff believes that construction and operation of the project will not bring about indirect impacts, in the form of additional fuel consumption, that would not have occurred but for the project. The existing older, less efficient unit that this project would replace consumes more natural gas per megawatt-hour to operate than the new, more efficient proposed unit. The high efficiency of the proposed El Centro Unit 3 Repower Project should allow it to compete very favorably, running at a high capacity factor, replacing less efficient power generating plants, and therefore not impacting and likely reducing the cumulative amount of natural gas consumed per megawatt-hour of power generation.

## **CONCLUSIONS**

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The El Centro Unit 3 Repower Project, if constructed and operated as proposed, would generate a nominal 128 MW, an increase of 84 MW, with a maximum overall project fuel efficiency of 42.1 percent HHV, a 42 percent increase over that of the current power plant. While it will consume substantial amounts of energy, the El Centro Unit 3 Repower Project 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 El Centro Unit 3 Repower Project would present no significant adverse impacts upon energy resources.

## **PROPOSED CONDITIONS OF EXEMPTION**

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No conditions of exemption are proposed.

## **REFERENCES**

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GTW (Gas Turbine World). 2005. *Gas Turbine World 2004-2005 Handbook*, volume 24

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

IID2006a – Imperial Irrigation District/J Federowicz (36971) Submittal of the Application for Small Power Plant Exemption (Volumes 1 and 2) for the El Centro Unit 3 Repower Project Dated 05/17/06. Submitted to CEC/B.B. Blevins/M Dyas/Dockets on 05/19/06.

IID2006q – Imperial Irrigation District/J Diven (37625) Memorandum on Energy Resources Efficiency Questions and Responses. Submitted to Dockets 08/07/06.

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

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

## **SUMMARY OF CONCLUSIONS**

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The proposed El Centro Generating Station Unit 3 Repower Project is located entirely within the existing El Centro Generating Station (ECGS) plant facility in an area with minimal geologic hazards, and no known viable geologic or mineralogic resources. The geologic hazards present, which include strong ground shaking and expansive soils, can be effectively mitigated to less than significant as long as the recommendations of the project geotechnical report (IID2006a) are followed during design and construction of the project. As a result, the potential for geologic hazards to affect operation of the site is considered negligible, and construction and operation of the proposed facility should have no impact on potential geologic or mineralogic resources.

The site is overlain by 5 to 6 feet of artificial fill underlain by natural deposits with a high potential for paleontological resources to be encountered during excavation. As long as the Paleontological Conditions of Exemption are adopted, the potential impact to such resources can be effectively mitigated to a less than significant level.

## **INTRODUCTION**

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In this section, staff discusses potential impacts of the proposed 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 Laws, Ordinances, Regulations and Standards (LORS) are listed in the Small Power Plant Exemption (SPPE) Application in Sections 6.5.5 and 6.6.1 (IID2006a). 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 existing El Centro Generating Station facility 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).

## **SETTING**

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The proposed power plant project site is located in the central portion of the Imperial Valley region of the Salton Trough, a topographic and structural depression within the Colorado Desert physiographic province in Southern California. Tectonically, the Salton Trough appears to lie on the boundary between the western edge of the North American Plate and the eastern edge of the Pacific Plate, with relative plate motion being transferred to the regional San Andreas Fault system via at least three more localized fault zones (Elders, 1979). This province is characterized by broad alluvium filled valleys and plains and is bounded to the west by the northwest trending granitic mountains of the Peninsular Ranges physiographic province and on the east by the southern portion of the Basin and Range physiographic province (Norris and Webb, 1990).

The SPPE application (IID2006a) provides documentation of potential geologic hazards at the plant site. Review of the SPPE application and preliminary plant site geotechnical report (IID2006a), coupled with staff's independent research, indicate potential geologic hazards at the site are minimal. Staff's independent research included review of available geologic maps, reports, and related data of the proposed IID power 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.

## **SITE GEOLOGY**

The project site is located southeast of the southeast margin of the Salton Sea, a large saline lake with a surface elevation of approximately 228 feet below sea level. The project site is fully developed and overlain by 5 to 6 feet of artificial fill which is underlain by clays attributed to the ancient Lake Cahuilla (IID2006a). Lacustrine sediments in the Imperial Valley are thought to vary between approximately 100 to 300 feet thick (Kovach et. al., 1962). The surface alluvium is generally 1 to 2 feet thick, and is classified as dry and very loose. At this site, the Lake Cahuilla deposits are clay and interbedded silt soils, classified as dry to saturated, firm to hard, and as exhibiting moderate to high expansion potential.

The project geotechnical consultant advanced 5 borings and 2 cone penetration soundings at the proposed turbine-generator replacement site to characterize the subsurface conditions. No bedrock was encountered to the maximum depth explored of 100 feet, but ground water was found at 4 to 6 feet below existing grade (IID2006a). Since the site is overlain by 5 to 6 feet of fill, the ground water appears to lie at about original ground elevation. Staff concurs with the exploration and testing approach, and the results of this program.

## 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 – Salton Sea Sheet (Jennings, 1967), Fault Rupture Hazard Zones in California (Hart and Bryant, 1999), the Simplified Fault Activity Map of California (Jennings and Saucedo, 2002), Epicenters of and Areas Damaged by M<sub>≥</sub>5 California Earthquakes, 1800 – 1999 (Topozada et al, 2000), 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 existing ECGS footprint. The closest known active (Holocene age) fault is the Imperial fault, approximately 3 miles east of the plant site. Other faults with potential to induce significant ground shaking at the site include the Superstition Hills (San Jacinto) fault located approximately 4 miles northwest of the site, the Brawley fault zone located approximately 11.2 miles to the north, and the Laguna Salada fault located about 20 miles to the southwest. Numerous, more distant faults within 100 miles have the potential to generate lower levels of ground shaking at the project site. Staff has calculated the approximate deterministic peak ground acceleration at the site for the five closest active faults with the California Building Code (2001) Seismic Soils SD Profile, using the EQFAULT computer program (Blake, 2000).

| Fault Name                       | Maximum Moment Magnitude | Distance from Site | Calculated Peak Ground Acceleration |
|----------------------------------|--------------------------|--------------------|-------------------------------------|
| Imperial                         | 7.0                      | 3.4 miles          | 0.476g                              |
| Superstition Hills (San Jacinto) | 6.6                      | 4.0 miles          | 0.230g                              |
| Superstion Mtn. (San Jacinto)    | 6.6                      | 11.2 miles         | 0.193                               |
| Brawley Seismic Zone             | 6.4                      | 11.2 miles         | 0.173g                              |
| Laguna Salada                    | 7.0                      | 20.3 miles         | 0.154g                              |

## 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. Because the proposed plant site is underlain by primarily clayey soil, to the depth liquefaction is likely to occur; only thin interbeds with liquefaction potential were encountered in the project geotechnical investigation. The magnitude of total liquefaction induced ground settlement was calculated at about ½-inch (IID2006a), a nearly insignificant value.

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. Since the site is underlain by hard, cohesive soils, dynamic compaction of site soils is not possible.

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

The artificial fill overlying the site is uncontrolled in the sense that there is no known documentation of material quality and density. Such fills have the potential for excessive consolidation (settlement of overlying structure) or expansion (heave of overlying structure) depending on in-place density, in-place moisture, and soil type. The applicant's geotechnical consultant has recommended removal and replacement measures that should adequately mitigate any unsatisfactory performance of the uncontrolled fill.

Ground subsidence is typically caused when ground water is drawn down by irrigation activities, municipal wells, or by oil extraction, such that the effective unit weight of the soil mass is increased, which in turn increases the effective stress on underlying soils, resulting in consolidation/settlement of the underlying soils. Subsidence may also be caused by regional tectonic processes. Normally, these forms of subsidence affect a regional area so that the potential for localized differential settlement is very low.

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 geotechnical report, most of the site is characterized by a veneer of clay fill overlying clay soils with a medium to high expansion potential. Therefore, mitigation measures, such as are specified in the applicant's geotechnical

report, will be appropriate and necessary to minimize movement of structures due to soil expansion.

## **LANDSLIDES**

The project is to be located on flat terrain, distant from steep slopes which might be susceptible to landslides. Consequently, the potential for damage due to landslides is considered negligible.

## **TSUNAMIS AND SEICHES**

Tsunamis and seiches are earthquake-induced waves, which can inundate low-lying areas adjacent to large bodies of water. The project site is situated approximately 50 feet below mean sea level. The nearest extension of the Pacific Ocean is the Sea of Cortez, lying within the Gulf of California, about 200 miles to the south. This distance and topographically higher terrain between the project site and the coast should preclude damage to the project due to tsunami activity. The closest body of water to the proposed project is the Salton Sea, approximately 22 miles to the north-northwest. The Salton Sea is more than 175 feet lower in elevation than the proposed project site and no other large bodies of water are present near the plant site. As a result, the potential for tsunamis and seiches to affect the site is considered negligible.

## **GEOLOGIC, MINERALOGIC AND PALEONTOLOGIC RESOURCES**

The project site is located on Pleistocene and Holocene-age alluvial deposits of the ancient Lake Cahuilla and Brawley Formation. Energy Commission staff have reviewed applicable geologic maps and reports for this area (Jennings, 1967; DOGGR, 1982; Tooker and Beeby, 1990; and Larose et al., 1999). Based on this information and the information contained in the application, there are no known geologic or mineralogic resources located at or immediately adjacent to the ECGS site. However, native soils beneath the fill at the proposed El Centro Unit 3 Repower project are considered likely to contain fossil remains which may include invertebrates, fishes, birds, and/or mammals of various sizes.

The applicant's consultant conducted a paleontologic resources field survey and a sensitivity analysis for the proposed Unit 3 Repower Project. The 5 to 6 feet of fill material has a low to non-sensitivity rating. The underlying Pleistocene and Holocene alluvial deposits have been assigned a "high" sensitivity rating with respect to potentially containing paleontological resources, and several known fossil sites are located in and around the project area (IID2006a). 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, 1995), 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 Unit 3 Repower 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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The California Environmental Quality Act (CEQA) Guidelines Appendix G provides a checklist of questions that a lead agency should normally address if relevant to a project's environmental impacts.

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

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

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

| <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</b> - Would the project:  |                                       |   |                                     |                  |
| 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                |
| V. Inundation by seiche, tsunami or mudflow?   |                                       |   |                                     | X                |
| B. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse the loss of topsoil?                                |                                       |   |                                     | X                |
| C. 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   |                                     |                  |
| <b>MINERAL RESOURCES</b> - Would the project:  |                                       |   |                                     |                  |
| A. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?   |                                       |   |                                     | X                |
| B. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?  |                                       |   |                                     | X                |
| <b>PALEONTOLOGICAL RESOURCES</b> - Would the project:  |                                       |   |                                     |                  |
| 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 El Centro Unit 3 Repower project 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 El Centro Unit 3 Repower 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 0.40g.

##### ***III. Seismic Ground Failure or Liquefaction: Less than Significant Impact***

The site is located on saturated fine grained, cohesive sediments which are not subject to liquefaction. Liquefaction of thin silt interbeds could produce an insignificant magnitude of total and differential settlement.

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

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

##### ***V. Inundation by seiche, tsunami or mudflow: No Impact***

Since the project facilities are located a significant distance from the Pacific Ocean, and significantly higher in elevation than the Salton Sea, damage due to seiche, tsunami or mudflow is not considered to be a potential impact.

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

The site is underlain by saturated, soils which are too cohesive to liquefy. Differential settlement of site soils is expected to have no impact if appropriate mitigation measures are employed. This will include removing the uncontrolled artificial fill and replacing it, as necessary to achieve grade, with engineered fill.

#### **C. Expansive Soils: Less Than Significant with Mitigation Incorporated**

Expansive soils identified beneath the artificial fill should have minimal impact if appropriate mitigation measures are employed during project construction.

## **Mineral Resources**

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

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

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

There are no known geological or mineralogical resources recovery sites located at or immediately adjacent to the existing ECGS 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 presence of known fossil sites in and around the project area, and the high potential to encounter such resources during construction, the Applicant has proposed monitoring and mitigation measures to be followed during the construction of the plant. Energy Commission staff agrees with the Applicant that the scientific value of any 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 SVP (1995). As stated in the Unit 3 Repower application, 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 mitigated to less than significant.

## **CUMULATIVE IMPACTS**

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The existing ECGS site lies in an area that exhibits minimal geologic hazards and no known geologic or mineralogic resources at the plant site or linear facilities. The natural geologic units that underlie the site do, however, exhibit a high potential to contain significant paleontological resources, but the potential impact to such resources can be mitigated to a less than significant level with the adoption of the recommended Conditions of Exemption. 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 significant adverse cumulative impacts to the project from geologic hazards, and to potential geologic, mineralogic, and paleontologic resources from the proposed project is low.

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

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No comments on geology and paleontology have been received for the IID project.

## **CONCLUSION AND RECOMMENDATIONS**

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The proposed Conditions of Exemption are to allow the Energy Commission Compliance Project Manager (CPM) and the applicant to adopt a compliance monitoring scheme that will ensure no substantial adverse impacts to paleontological resources due to construction of the project. In addition, the adoption of these Conditions of Exemption should ensure compliance with applicable LORS for paleontological resources.

## **PROPOSED CONDITIONS OF EXEMPTION**

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**PAL-1** Prior to construction, the project owner shall retain a Paleontological Resource Specialist (PRS) to both design and implement a monitoring and mitigation program. The proposed PRS shall meet the minimum qualifications for a vertebrate paleontologist as described in the SVP guidelines (1995). During construction, earth moving construction activities shall be monitored by the PRS where these activities will potentially disturb previously undisturbed sediment. Monitoring shall not be conducted in areas where the ground has been previously disturbed or in areas where exposed sediment will be buried, but not otherwise disturbed.

### **Verification:**

1. At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for on-site work.
2. At least 20 days prior to ground disturbance, the PRS or project owner shall provide a letter with resumes naming anticipated monitors for the project and stating that the identified monitors meet the minimum qualifications for paleontological resource monitoring required by the condition. If additional monitors are obtained during the project, the PRS shall provide additional letters and resumes to the CPM. The letter shall be provided to the CPM no later than one week prior to the monitor beginning on-site duties.
3. Prior to the termination or release of a PRS, the project owner shall submit the resume of the proposed new PRS to the CPM for review and approval.

**PAL-2** The Paleontological Resource Monitoring and Mitigation Program (PRMMP) shall include preconstruction coordination; construction monitoring only during earthwork activities; emergency discovery procedures; sampling and data recovery, if needed; preparation, identification, analysis, and museum curation of any fossil specimens and data recovered; and reporting. This monitoring and mitigation plan shall be consistent with SVP (1995) standard guidelines for the mitigation of construction-related adverse impacts on paleontological resources, as well as the requirements of the designated museum repository for any fossils collected (SVP 1996).

**Verification:** At least 30 days prior to ground disturbance, the project owner shall provide a copy of the PRMMP to the CPM. The PRMMP shall include an affidavit of authorship by the PRS, and acceptance of the PRMMP by the project owner evidenced by a signature.

**PAL-3** Prior to start of construction, all personnel who will be involved with earth-moving activities will be informed that fossils may be encountered, on the appearance of common fossils, and on proper notification procedures. This Worker Environmental Awareness Program (WEAP) training shall be prepared and presented in an environmental awareness video.

**Verification:** (1) At least 30 days prior to ground disturbance, the project owner shall submit the proposed WEAP including the script and final video to the CPM for approval.

**Certification of Completion  
 Worker Environmental Awareness Program  
 El Centro Generating Station – Unit 3 Repower Project (Docket 06-SPPE-2)**

This is to certify these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on Cultural, Paleontology and Biological Resources for all personnel (i.e., construction supervisors, crews and plant operators) working on-site or at related facilities. By signing below, the participant indicates that they understand and shall abide by the guidelines set forth in the Program materials. Include this completed form in the Monthly Compliance Report.

| <b>No.</b> | <b>Employee Name</b> | <b>Title/Company</b> | <b>Signature</b> |
|------------|----------------------|----------------------|------------------|
| 1.         |                      |                      |                  |
| 2.         |                      |                      |                  |
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| 24.        |                      |                      |                  |
| 25.        |                      |                      |                  |

Cultural Trainer: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_/\_\_/\_\_

Paleo Trainer: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_/\_\_/\_\_

Biological Trainer: \_\_\_\_\_

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# HAZARDOUS MATERIALS MANAGEMENT

Shahab Khoshmashrab

## INTRODUCTION

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This section provides a discussion of staff's evaluation of the potential impacts of the proposed El Centro Unit 3 Repower Project (El Centro Unit 3 Repower or project) associated with the handling of hazardous materials. Energy Commission staff's (staff) 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. Staff has determined that all California Environmental Quality Act (CEQA) checklist items for hazardous materials are either "less than significant impact" or "no impact." A brief hazards and hazardous materials overview of the project is provided, as are comments regarding selected CEQA checklist items with respect to hazards and hazardous materials. The section concludes with staff's proposed 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 proposed El Centro Unit 3 Repower 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, Sections 25534 and 25535.1**

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). The

owners are required to submit the RMP 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. Imperial County Environmental Health Department, Department of Toxic Substances Control 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. Imperial County Environmental Health Department, Department of Toxic Substances Control is the local administering agency.

## **LOCAL**

### **Uniform Fire Code**

The Uniform Fire Code (UFC), Articles 79 and 80, contain minimum setback requirements for the outdoor storage of ammonia. Also, the National Fire Protection Association (NFPA) Code 850 contains provisions regarding the storage and handling of hazardous materials.

### **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 project site is located within the existing El Centro Generating Station (ECGS), which is located at 485 East Villa Avenue in El Centro, California. The major land use characteristics within a 3-mile radius of the project include cultivated farmlands and sparse residential.

The project consists of replacing the existing CE boiler with a GE Frame 7EA dry combustion turbine generator and heat recovery steam generator to supply steam to the existing Westinghouse steam turbine generator.

As part of the proposed project, there will be no new hazardous material storage areas. The project will take advantage of the existing hazardous material inventory currently stored and will not require the storage of additional bulk hazardous materials.

Of the existing hazardous materials, only anhydrous ammonia is present in amounts greater than the federal and state-regulated reportable quantities. Anhydrous ammonia is stored on the ECGS site in an existing 12,000-gallon storage tank.

Currently, the ECGS receives six anhydrous ammonia deliveries per year. As a result of the proposed El Centro Unit 3 Repower Project, six additional anhydrous ammonia deliveries will occur annually via the existing route from the source point, Anaheim, CA. The average capacity of a delivery truck is 36,000 lbs or approximately 7,000 gallons.

The primary fuel source for the 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. Anhydrous ammonia will be used in the SCR process to convert the NO<sub>x</sub> into nitrogen and water vapor, utilizing the existing anhydrous ammonia storage tank. A number of other hazardous chemicals will also be used in small quantities.

The existing safeguards and measures to greatly reduce the opportunity for, or the extent of, exposure to hazardous materials or other hazards will continue to be exercised.

## **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 or use of hazardous materials?  |                                |  | X                            |           |
| B) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?   |                                |  | X                            |           |
| C) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?   |                                |  |                              | X         |
| D) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?  |                                |  |                              | X         |
| E) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?  |                                |  |                              | X         |
| F) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?   |                                |  |                              | X         |
| G) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?   |                                |  |                              | X         |
| H) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?  |                                |  |                              | X         |
| I) Exceed an applicable LRDP or Program EIR standard of significance?   |                                |  |                              | X         |
| <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:</b> |                                |  |                              |           |
| J) Impact on Fire Protection Services?  |                                |  |                              | X         |

## DISCUSSION OF IMPACTS

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

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

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 new hazardous materials to be used during operation of the project is included in Table 6.14-1 of the Small Power Plant Exemption (SPPE) application (and reproduced in **Appendix A** of this section) (IID2006a). Two of these materials, anhydrous ammonia and natural gas, are addressed below.

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

#### Anhydrous Ammonia

Based on the discussion above, anhydrous ammonia is one of the two hazardous materials that may pose a risk of off-site impacts. Anhydrous ammonia will be used in controlling the emission of oxides of nitrogen (NO<sub>x</sub>) from the combustion of natural gas. One existing 12,000-gallon pressure vessel tank is being used to store the existing quantities of anhydrous ammonia. This tank will also be used to store the additional quantities of anhydrous ammonia required for the El Centro Unit 3 Repower. The maximum amount of ammonia stored in it will be limited to 10,200 gallons by engineering and administrative measures. Anhydrous ammonia is a gas at ambient temperature and is therefore stored under pressure to maintain it in the liquid state. An event causing the rupture of the tank, a pipe, or valve would result in a mixed-phase, liquid-gas jet of ammonia leaving the containment structure at a high rate. Because of its relatively high vapor pressure and the large amounts of anhydrous ammonia that will be stored on-site, an accidental release of anhydrous ammonia without proper mitigation could, in some circumstances, result in high down-wind concentrations of ammonia gas.

To assess the potential impacts associated with a potential release of ammonia, staff typically evaluates where four "bench mark" exposure levels of ammonia gas occur off-site. These exposure levels include: 1) the lowest concentration posing a risk of lethality, 2,000 PPM; 2) the Immediately Dangerous to Life and Health (IDLH) level of 300 PPM; 3) the Emergency Response Planning Guideline (ERPG) level 2 of 200 PPM, which is also the RMP level 1 criterion used by USEPA and California; and 4) the level considered by staff to be without serious adverse effects on the public for a one-time accidental exposure of 75 PPM. (A detailed discussion of the exposure criteria considered by staff and their applicability to different populations and exposure-specific conditions is provided in **Appendices B and C** of this analysis.)

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

To gauge the significance level of potential impacts to public receptors from a proposed facility, staff uses the internationally accepted and generally used the minimus level of societal risk, (*SR*), equal to  $10^{-4}$  fatalities per year. Societal risk is defined as the product of the estimated annual frequency of the incident (*F*) multiplied by the estimated number of fatalities resulting from the incident (*N*) (AIChE 1998). As an example, a societal risk level of  $10^{-4}$  would result from an event with an expected annual frequency, or the annual probability of occurrence, of  $10^{-6}$ , that has a potential for up to 100 fatalities, ( $SR = 10^{-6} \times 100 = 10^{-4}$ ). This level of risk could also be described as 100 expected fatalities per million years, or equivalently, as 1 expected fatality per 10,000 years.

For cases where the societal risk falls below  $1 \times 10^{-4}$  fatalities per year, the risk is considered de minimus, and further mitigation is not required. For cases where the societal risk is greater than  $1 \times 10^{-4}$ , but less than  $1 \times 10^{-1}$ , the risk may either be deemed acceptable, or, further risk reduction may be required, depending on the level of risk found and the feasibility of further mitigation. For cases where societal risk is found to be greater than  $1 \times 10^{-1}$ , the risk is generally considered to be unacceptable.

A Risk Management Prevention Plan (RMPP) was created in 1992 to address the worst-case risks associated with the anhydrous ammonia storage and handling systems for Unit 2, and was updated in 2000 to address the additional ammonia needs for Unit 4. This RMPP, a predecessor program to today's California Accidental Release Program (CalARP), addressed many worst-case accidental release scenarios, including complete tank failure, a prolonged pipe break during unloading, and a prolonged break in the piping carrying liquid ammonia to the SCR (IID2006a, § 6.8.3).

Since the anhydrous ammonia system, including the tank, the feed lines to Units 2 and 4, and the unloading area already exist at ECGS, the Imperial Irrigation District (IID or applicant) only examined the newly added risks associated with the El Centro Unit 3 Repower.

For the particular case of El Centro Unit 3 Repower, modeling of the atmospheric dispersion of the resulting plume was done using the SLAB computer code, consistent with accepted denser-than-air initial plume assumptions for anhydrous ammonia releases (Ermak). The modeled release scenario considered two scenarios.

The first scenario assumed that accidental release of anhydrous ammonia will occur during unloading, when the hose delivering the anhydrous ammonia from the truck to the storage tank pulls away from the tank at the unloading connection. In the unlikely event that the unloading hose pulled away from the tank connection, all of the safety measures described in the application (IID2006a, §§ 6.8.3.1, 6.8.3.2) would minimize the extent of the release of ammonia to the atmosphere.

This analysis predicted that the distances to the USEPA toxic endpoint for ammonia (200 PPM) and the Short-Term Public Emergency Limit (STPEL) of 75 PPM were 98 and 288 meters, respectively. The toxic endpoint distance is measured from the point of release (the delivery truck unloading connection) to the point at which the ambient ammonia concentration from the accidental release falls to only 200 PPM. The STPEL distance is from the point of release to the point at which the ambient ammonia concentration from the accidental release falls to only 75 PPM.

The second scenario assumed a break in the El Centro Unit 3 Repower feed line from the anhydrous ammonia storage tank to the project's SCR unit. In the event of a feed line break, the exterior pipe should contain all of the release. If both, the internal and external piping break, the combination of the isolation valves and upstream and downstream excess flow valves would limit the amount of ammonia released. Worst-case meteorological conditions that minimize atmospheric dispersion of an airborne substance were assumed for the accidental release scenario of this feed line, since this accident could occur at anytime, day or night (IID2006a, §§ 6.8.3.1, 6.8.3.2).

This analysis predicted that the distances to the USEPA toxic endpoint for ammonia (200 PPM) and the Short-Term Public Emergency Limit (STPEL) of 75 PPM were 88 and 477 meters, respectively.

There are no residences, businesses, or sensitive receptors within these distances to the toxic endpoints and the STPEL from the ammonia storage and unloading facility and the feed lines.

Staff therefore concludes that the societal risk represented by the likelihood of occurrence and the extent of potential exposure due to an accidental release of anhydrous ammonia at the El Centro Unit 3 Repower is not sufficient to support a finding of potentially significant impact.

### ***Risk from Hazardous Materials Transportation***

Hazardous materials including ammonia, sulfuric acid, and sodium hypochlorite will be transported to the facility via tanker truck. While many types of hazardous materials will be transported to the site, it is staff's belief that because of environmental mobility, toxicity, quantities and frequency of delivery, transport of ammonia would pose the predominance of risk associated with accidental release during such transport.

Staff believes that it is appropriate to rely on the extensive regulatory program that applies to shipment of hazardous materials on California highways to ensure safe

handling in general transportation (see the Federal Hazardous Materials Transportation Law [49 U.S.C. §5101 et. seq.], the U.S. Department of Transportation Regulations [49 C.F.R. Subpart H, §172-700], the U.S. Department of Homeland Security Regulations [49 C.F.R. Parts 1570 and 1572], and California Department of Motor Vehicles (DMV) Regulations on Hazardous Cargo). These regulations also address the issues of driver competence and security threat assessment. Through this regulatory program, risks from transportation have been reduced to levels that are as low as reasonably practical. Still, transportation risks are, in general, orders of magnitude greater than the risks from accidental release associated with fixed facilities. For this reason, staff evaluates the comparative transportation-related risks resulting from the use of anhydrous ammonia at the El Centro Unit 3 Repower. Although, currently this chemical is being delivered to the ECGS in compliance with the requirements of the US Department of Transportation (DOT) for the transport of hazardous materials, staff believes that to determine, more accurately, the risks associated with the transport of these materials to the project site, an independent study of the project specific route and any sensitive receptors should be performed. Therefore, staff, independently visited the route on August 3, 2006 (see below).

### ***Risk from Anhydrous Ammonia Transportation***

Staff evaluated the risk of impact to the public associated with the transportation of anhydrous ammonia using transport statistics developed by Davies and Lees (Lees 1996). Due to ECGS's location, the data representing the worst-case accident rate for transport by rural multi-lane undivided roads would be applicable to the project area. The maximum rate of accidental cargo release per vehicle-mile traveled on such roads is 0.36 in one million miles traveled (Lees 1996). The incidence of significant spillage per vehicle-mile is estimated to be  $1 \times 10^{-7}$  (that is, one in every 10 million miles traveled). For vehicles transporting hazardous materials, about 10 percent of all accidents cause fatalities. Most of these fatalities occur in the immediate vicinity of the accident. Typically, such fatalities result from injuries associated with the accident itself and are not caused by accidental release of cargo (Lees 1996). On average there were about 1.5 fatalities per fatal accident, regardless of whether or not a release occurred. However, as mentioned above, nearly all (~97.5 percent) of these were the result of the accident rather than released hazardous materials. Based on differences between the number of fatalities in accidents with and without loss of hazardous materials cargo, as given by Lees (Lees 1996), staff estimated that 2.5 percent of the average fatalities are due to released materials and the rest are due to physical injuries occurring in the accident.

Further, the occurrence of fatalities and injuries as indicated by accident statistics does not imply that such impacts were on populations near the facility. In fact, the population most often impacted by ammonia transport accidents is other road users. The potential for impacts to in-route populations near highways due to releases will be highly dependent on the proximity of the in-route populations to the accident location and on other factors present at the time of the accident, such as wind direction and whether the meteorological conditions are conducive to atmospheric dispersion of the release plume. It is staff's opinion that the risk of impact (injury or

fatality) to the populations along the transportation route would be at least one order of magnitude less than the risk of occurrence of the transportation-related release due to frequency of adverse meteorological conditions (Lees 1996).

To address the issue of tanker truck safety, the applicant stated that anhydrous ammonia would be delivered to the proposed facility only in certified vehicles with a design capacity of 7,500 gallons. These vehicles will be designed to DOT Code MC-330 or MC-331. These are high integrity vehicles designed for hauling caustic materials under pressure such as anhydrous ammonia.

Staff reviewed the applicant's proposal to use anhydrous ammonia. Because anhydrous ammonia has been used at the ECGS site in accordance with the laws, regulations and accepted standards, staff only accesses the potential release of anhydrous ammonia during transport to the site associated with the proposed six additional deliveries per year for the project.

Staff evaluated the anhydrous ammonia delivery route for the project on August 3, 2006. Based on staff's observation, the transport of ammonia through this route poses very low risk of injuries to the population along the route. Most of the route is along a four-lane highway (Highway 86) and just a few side streets with light traffic and low vehicle speed limits. Vehicle speed on Highway 86 within the cities of Imperial and El Centro is restricted to 35 Mph. Traffic on this highway is light and limited to mostly cars with very low or no large vehicle traffic (such as big rigs or other tanker trucks). All major intersections observed along the route are controlled by automatic traffic-control signals and have dedicated left-turn lanes. There are few railroad crossings along the way. However these crossings are controlled by automatic traffic-control arms and signals, and are located in areas with low population and in open-space areas. The population density along the route is low with mostly commercial, industrial, open space and a few residential areas in the proximity of the route. Even though the wind observed indicates high probability of low level winds concluding pessimistic dispersion conditions, for the reasons described above, the risk from anhydrous ammonia transportation to the ECGS site for the El Centro Unit 3 Repower is less than significant.

Staff proposes Condition of Exemption **HAZ-1** to ensure the applicant adheres to the requirements for anhydrous ammonia transportation in compliance with the applicable LORS.

### **Natural Gas**

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

procedures require air purging of the gas turbines prior to start-up, thus precluding the presence of an explosive mixture.

El Centro Unit 3 Repower will use the existing natural gas transportation infrastructure. The project will interconnect, via a 500-foot pipeline, to the existing Southern California Gas Company (SCGC) high pressure gas metering station located within the existing ECGS site. This new pipeline will be well within the ECGS property fenceline. An accidental release of natural gas from this pipeline could occur. In order to detect an accidental release of natural gas, both SCGC's main pipeline and the gas in the proposed pipeline will be odorized. The existing 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 by SCGC 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 this new pipeline in accordance with applicable standards will result in an insignificant 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 Impact**

Anhydrous ammonia is being proposed for use in controlling NO<sub>x</sub> emissions created during the combustion of natural gas at the El Centro Unit 3 Repower. As stated by the applicant in the SPPE application and concurred by staff, the revised existing anhydrous ammonia Safety Management Plan will address potential impacts which may occur during the transfer of anhydrous ammonia from the delivery vehicle to the storage tank.

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

Staff reviewed the applicant's proposal to use anhydrous ammonia. Because anhydrous ammonia has been used at the ECGS site in accordance with the laws, regulations and accepted standards, staff only assesses the potential release of

anhydrous ammonia during transport to the site associated with the proposed six additional deliveries per year for the project. For this analysis, see Section A (Transport or Use of Hazardous Materials), above.

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

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

There are no known schools within a ¼ mile radius of the proposed project. The nearest school is Washington School, located about 0.35 miles south of the project site. At this distance, there is virtually no risk of a hazardous plume causing an off-site impact.

There is a school within few hundred feet of Highway 86, the anhydrous ammonia transportation route, within El Centro city limits. However, according to staff's analysis concluding less than significant risk of release, nearly zero probability of such a release occurring in the stretch of the highway short enough for the chemical to reach the school, and due to the relatively open space surrounding the school, the possibility of a significant impact at this location during the transport will be highly unlikely.

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

The El Centro Unit 3 Repower Project is not located on a hazardous waste site.

**E. Airport Hazard Area: No Impact**

There are no airports within two miles of the site, nor is the project located within an airport land use plan.

**F. Private Airstrip Hazard Area: No Impact**

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

**G. Impair Emergency Response Plan: No Impact**

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

**H. Exposure to Wildland Fires: No Impact**

The proposed project will be built on an existing paved site. This site and the surrounding area are clear of substantial vegetation. Therefore there will be no impact from exposure to wildlife fires.

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

There will be no new project site development and the use of the site is consistent with the applicable LRDP and EIR plans.

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

The project site would not store large volumes of fuel or flammable materials. Although natural gas is used as a fuel, it is not stored on-site, resulting in an insignificant risk of fire or explosion. The fire protection system will comply with City underwriters requirements, 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 NFPA and the California Fire Code. Similarly, the need for hazmat response services also should be infrequent. 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. This is highly unlikely, considering the nature of the land uses and low level of industrialization in the local surrounding area. Therefore, staff considers the scenario of simultaneously occurring releases, under meteorological conditions which allow their respective plumes to merge, and travel downwind without significant dispersion, to be extremely unlikely.

The ECGS is an existing site and its continued use will not increase the amounts of hazardous materials in the local project area. Thus, the proposed project will not result in any significant cumulative impacts associated with hazardous materials.

## **CONCLUSIONS**

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By incorporating the appropriate conditions of exemption, below, the routine transport to and use of hazardous materials at the El Centro Unit 3 Repower Project site will not result in significant impacts to the public or the environment. The existing safeguards and measures to greatly reduce the opportunity for, or the extent of, exposure to hazardous materials or other hazards will continue to be exercised.

Staff concludes that the project will result in less than significant direct or cumulative hazardous materials impact to the environment including an environmental justice population.

## **PROPOSED CONDITIONS OF EXEMPTION**

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

**Verification:** At least 30 days prior to receipt of anhydrous ammonia onsite, the project owner shall submit copies of the notification letter to supply vendors indicating the transport vehicle specifications to the Compliance Project Manager (CPM) for review and approval.

**HAZ-2** The project owner shall not use any hazardous material in reportable quantities in the new equipment installed as part of the El Centro Unit 3 Repower Project, as specified in Title 40, Code of Federal Regulations, section 355.50, not listed in Table 6.14-1 of the SPPE application (IID2006a), 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 that are used in the new equipment installed as part of the project, in reportable quantities.

**HAZ-3** The project owner shall update the existing Business Plan and submit to the local Certified Unified Program Agency (CUPA).

**Verification:** At least 60 days prior to first receiving any hazardous material on the project site, the project owner shall provide a copy of a final Business Plan to the CPM.

At least 60 days prior to first delivery of anhydrous ammonia to the Project Site, the applicant shall provide the final EPA-approved RMP, to the CUPA, and the CPM.

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**Appendix A**  
**TABLE 6.14-1 (From Application for Exemption)**

**ANTICIPATED HAZARDOUS MATERIALS USAGE**

| <b>Chemical</b>   | <b>Use</b>               | <b>Storage</b>                              | <b>Location</b>       | <b>Delivery</b>                  | <b>Notes</b>   |
|---|--------------------------|---|-----------------------|----------------------------------|--|
| Anhydrous ammonia (EXISTING)                                | ~25 lbs/hr (Unit 3 only) | 10,200 gallons (12,000 gross tank capacity) | Existing Outdoor tank | 6 additional deliveries per year | ~7,000 gallons (36,000 lbs) delivery quantity  |
| Transformer mineral insulating oil                          | Transformer oil          | ~8,175 gallons                              | Equipment             | One-time                         | <7,000 gallons per GSU transformer (1 total)<br><br><500 gallons per auxiliary transformer (2 total)<br><br><50 gallons per metering unit (3 total)<br><br><25 gallons per voltage transformer (1 total) |
| SF6 Gas   | N/A                      | 180 pounds                                  | Equipment             | N/A                              | <60 lbs per circuit breaker (3-total)  |
| CTG mineral lubricating oil                                 | Lubricating oil          | ~2,500 gallons                              | Equipment             | 100 gallons/year                 | Common system for both combustion turbine and generator  |
| Corrosion inhibitor chemicals for closed cooling water loop | N/A                      | <50 gallons                                 | Equipment skid area   | As needed                        | Small periodic use based upon sample tests   |

Notes:

~ = approximately  
 < = less than  
 CTG = combustion turbine generator  
 GSU = generator step-up  
 lbs/hr = pounds per hour  
 N/A = not applicable

**Hazardous Materials  
Appendix B**

**Basis for Staff's Use of 75 PPM Ammonia Exposure Criteria**

**September 2004**

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

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

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

**Hazardous Materials Appendix B Table-1  
Acute Ammonia Exposure Guidelines**

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

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

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

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

**References for Hazardous Materials Appendix B, Table 1**

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**Abbreviations for Hazardous Materials Appendix B, Table 1**

ACGIH, American Conference of Governmental and Industrial Hygienists

AIHA, American Industrial Hygienists Association

EEGL, Emergency Exposure Guidance Level

EPA, Environmental Protection Agency

ERPG, Emergency Response Planning Guidelines

IDLH, Immediately Dangerous to Life and Health Level

NIOSH, National Institute of Occupational Safety and Health

NRC, National Research Council

STEL, Short Term Exposure Limit

STPEL, Short Term Public Emergency Limit

TLV, Threshold Limit Value

WHO, World Health Organization

# Hazardous Materials

## Appendix C

### Summary of Adverse Health Effects of Ammonia

#### **638 PPM**

##### **WITHIN SECONDS:**

- Significant adverse health effects;
- Might interfere with capability to self rescue;
- Reversible effects such as severe eye, nose and throat irritation.

##### **AFTER 30 MINUTES:**

- Persistent nose and throat irritation even after exposure stopped;
- irreversible or long-lasting effects possible: lung injury;
- Sensitive people such as the elderly, infants, and those with breathing problems (asthma) experience difficulty in breathing;
- Asthmatics will experience a worsening of their condition and a decrease in breathing ability, which might impair their ability to move out of area.

#### **266 PPM**

##### **WITHIN SECONDS:**

- Adverse health effects;
- Very strong odor of ammonia;
- Reversible moderate eye, nose and throat irritation.

##### **AFTER 30 MINUTES:**

- Some decrease in breathing ability but doubtful that any effect would persist after exposure stopped;
- Sensitive persons: experience difficulty in breathing;
- Asthmatics: may have a worsening condition and decreased breathing ability, which might impair their ability to move out of the area.

## **64 PPM**

### **WITHIN SECONDS:**

- Most people would notice a strong odor;
- Tearing of the eyes would occur;
- Odor would be very noticeable and uncomfortable.
- Sensitive people could experience more irritation but it would be unlikely that breathing would be impaired to the point of interfering with capability of self rescue
- Mild eye, nose, or throat irritation
- Eye, ear, & throat irritation in sensitive people
- Asthmatics might have breathing difficulties but would not impair capability of self rescue

## **22 or 27 PPM**

### **WITHIN SECONDS:**

- Most people would notice an odor;
- No tearing of the eyes would occur;
- Odor might be uncomfortable for some;
- Sensitive people may experience some irritation but ability to leave area would not be impaired;
- Slight irritation after 10 minutes in some people.

## **4.0, 2.2, or 1.6 PPM**

- No adverse effects would be expected to occur;
- Doubtful that anyone would notice any ammonia (odor threshold 5 - 20 PPM);
- Some people might experience irritation after 1 hr.

# LAND USE, RECREATION, AND AGRICULTURE RESOURCES

Amanda Stennick

## INTRODUCTION

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The land use analysis of the Imperial Irrigation District's (IID) El Centro Unit 3 Repower 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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### 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. The Program regularly updates Important Farmland Inventory Maps of the counties activities. The FMPP 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 Commission's siting, licensing, and exemption processes.

## **LOCAL**

### **City of El Centro Zoning Ordinance**

The City of El Centro Zoning Ordinance is the primary tool for achieving the objectives of the General Plan. The Zoning Ordinance provides detailed specifications for allowable development (e.g., density, lot size, height, setback, etc.). Other regulations governing development include grading and subdivision ordinances and building codes.

The City of El Centro is currently updating their zoning ordinance and zoning maps to bring them into compliance with the 2004 General Plan. As stated in the Application for the Small Power Plant Exemption (application), the update will be comprehensive and will affect the entire City. The application states that the City Council expects to adopt the updated zoning ordinance and maps in May 2006. The adoption of these items is now scheduled for December 2006 (Data Response 2006).

The project site is currently zoned Limited Use (LU). The City of El Centro applies the LU zone where concerns of public health and safety require that use of the property be limited and where public or semi-public ownership of land limits the use of the property. Typical land uses in the LU zone would include flood control or irrigation channels, schools, parks, or other public facilities, highways, railways or other transportation modes, or facilities for the production and transmission of electrical, gas, geothermal, or other forms of energy.

The application states that the City of El Centro does not anticipate a change in the zoning of the project site once the updated zoning ordinance and maps are adopted by the City Council. Staff confirmed that the City of El Centro does not expect the project site's LU zoning designation to change.

### **Imperial County Zoning Ordinance**

The project is located within Imperial County's sphere of influence. The project site is bounded on the north and east by Imperial County. The Imperial County zoning designations on the north and east borders of the project site are General Manufacturing, Agriculture A2, and Manufacturing Light Industrial. Trends in recent zoning changes in Imperial County show increased urbanization of agricultural lands. As stated in the application current zoning trends do not indicate changes in zoning near the project site.

### **City of El Centro General Plan**

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 City of El Centro General Plan designation for the site is Public. This land use designation includes parcels under public or semi-public ownership. The designation most often includes parcels owned either by the City of El Centro, Imperial Irrigation

District, school districts, or El Centro Regional Medical Center. Land uses for this designation include public facilities, existing or future highways, railways or other modes of transportation, cemeteries, or energy facilities.

### **Imperial County General Plan**

The Imperial County General Plan includes specific policies to preserve and enhance existing development and to provide for orderly and appropriate new development of Imperial County. Actions and approvals required by Imperial County Planning and Development Services must be consistent with the Imperial County General Plan.

The project site is bounded on the north and east by Imperial County. The Imperial County land use designation on the north and east borders of the project site is Planned Industrial. Other general plan land use designations in the area but not abutting the project site are Rural Residential and Single Family Residential. Because the project would be located at the El Centro Generating Station (ECGS) site, which is currently committed to energy production, staff believes the project would be consistent and compatible with the existing character of the area and the Imperial County land use designation Planned Industrial.

## **SETTING**

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### **PROJECT LOCATION AND DESCRIPTION**

The project site and temporary construction area are located within the existing ECGS property located at 485 East Villa Avenue in El Centro, California. The ECGS site is currently committed to energy production and the proposed project is situated on a currently vacant but previously disturbed portion of the ECGS site. The ECGS site is bounded by East Villa Avenue to the north, Dogwood Road to the east, Holton Road to the south, and a vacant 58-acre lot owned by IID to the west. The ECGS site is surrounded by agricultural uses to the north and east, industrial uses to the south, and residential uses to the west.

El Centro shares its northern border with the City of Imperial and Imperial County, while the City of Mexicali, Mexico is located 10 miles to the south and the City of Yuma, Arizona is 60 miles to the east.

### **SURROUNDING LAND USE**

Agricultural lands within the jurisdiction of Imperial County lie to the east and north of the ECGS site. None of the project components traverse either agricultural land or land covered by Williamson Act contracts. As stated in the application, farmland areas were assessed using the California Department of Conservation Farmland Mapping and Monitoring Program's Soil Candidate Listing for Prime Farmland and Farmland of Statewide Importance for Imperial County. No components of the project are located within any areas designated as prime farmland or farmland of statewide importance. No agricultural activities currently occur on the project site, nor have there been any during the last five years.

The nearest residential area is located approximately 2,600 feet west of the project. Residential development exists within one mile of the project site in all cardinal directions. There are four schools (middle and junior high) and 14 places of worship within one mile of the project site.

## IMPACTS

The Environmental Checklist identifies potential impacts in this issue area. Following 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>  |
| <b>AGRICULTURE RESOURCES -- In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:</b> |                                |  |                              |           |
| A. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?   |                                |  |                              | <b>X</b>  |
| B. Conflict with existing zoning for agricultural use, or a Williamson Act contract?  |                                |  |                              | <b>X</b>  |

| <b>ENVIRONMENTAL CHECKLIST</b>   | Potentially Significant Impact | Less than Significant With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-----------|
| LAND USE AND PLANNING -- Would the project:  |                                |  |                              |           |
| 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>  |

## **DISCUSSION OF IMPACTS**

### **Land Use and Planning**

#### **A. Division of an Established Community: No Impact**

The proposed project would be located in an area within the City of El Centro designated for the production and transmission of electrical, gas, geothermal, or other forms of energy. Neither the size nor nature of the project would result in a physical division of an established community. No new physical barriers would be created by the project, and no existing roadways or pathways would be blocked.

#### **B. Conflict with Land Use Plans or Policies: No Impact**

The project site is zoned Limited Use (LU) and the General Plan designation is Public, with electric generating facilities a permitted use in both classifications. The Public land use designation includes parcels under public or semi-public ownership such as parcels owned by the City of El Centro, Imperial Irrigation District, school districts, or El Centro Regional Medical Center. The project would be consistent with the City's policy to encourage infill development within the urbanized community before expanding new development onto agriculture lands surrounding El Centro. The proposed project is a modernization of an existing, long-established energy production facility. The project will utilize existing interconnection facilities, so no new interconnection facilities would be required outside of the ECGS site as a result of the project.

#### **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.

The project is located at a site already committed to energy production and will utilize ECGS existing staff. Therefore, additional employees would not be required and thus would not result in or induce significant population growth into the City of El Centro. Staff concludes that because the regional workforce will be able to accommodate the project 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.

### **Agricultural Resources**

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

The project facility, adjacent construction parking and laydown areas, and associated pipelines are not located in any areas designated as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland on the California Department of Conservation's Important Farmland Inventory Map for Imperial County. All construction activities will be within the ECGS site boundary on land that has no recent history of farming. As a result, no land will be permanently converted from agricultural production.

#### **B. Conflict with Existing Zoning for Agricultural Use: No Impact**

Agricultural lands within the jurisdiction of Imperial County lie to the east and north of the ECGS site. The Imperial County zoning designations on the north and east borders of the project site are General Manufacturing, Agriculture A2, and Manufacturing Light Industrial. Trends in recent zoning changes in Imperial County show increased urbanization of agricultural lands. Furthermore, no components of the project are located within any areas designated as prime farmland or farmland of statewide importance, or land covered by Williamson Act contracts. No agricultural activities currently occur on the project site, nor have there been any during the last five years.

The project site is currently zoned Limited Use (LU). The City of El Centro is currently updating their zoning ordinance and maps to conform to the 2004 General Plan and does not anticipate a change in the zoning of the project site.

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

The project facility, adjacent construction parking and laydown areas, and associated pipelines are not located in any areas designated as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland on the California Department of Conservation's Important Farmland Inventory Map for Imperial County. All construction activities will be within the ECGS site boundary. As a result, no land will be permanently converted from agricultural production, nor will any prime farmlands be affected as a result of the project.

## **CUMULATIVE IMPACTS**

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The El Centro Unit 3 Repower Project by itself and cumulatively would not adversely impact agricultural lands or result in the conversion of agricultural land to non-agricultural uses. As stated in the application, the City of El Centro and Imperial County have no planned or proposed developments in the area that would generate cumulative land use impacts. In addition, construction and operation of the project would not have a significant adverse cumulative impact on residential growth or transportation in the area. Therefore, no cumulative land use impacts are expected to result from construction and operation of the proposed project.

## **RESPONSES TO PUBLIC AND AGENCY COMMENTS**

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No comments have been received as of this writing.

## **CONCLUSIONS**

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The project would not physically divide an established community and would not conflict with any applicable habitat conservation plan. The project would not increase the use of public parks or recreational facilities, nor would it necessitate the construction or expansion of recreational facilities. The project would not impact agricultural lands or result in the conversion of any lands that are used for agricultural purposes. The project would be consistent with all state and local laws, ordinances, regulations, and standards.

## **PROPOSED CONDITIONS OF EXEMPTION**

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Staff proposes no Conditions of Exemption.

## **REFERENCES**

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Imperial County2006a – Planning And Development Services/J. Heuberger (37156) Response to CEC's 5/22/06 Request for Comments on the El Centro Unit 3 Repower Project Application for a Small Power Plant Exemption Dated 3/28/06. Submitted to CEC/Dockets 6/26/06.

# NOISE AND VIBRATION

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 El Centro Unit 3 Repower Project, and to recommend any procedures necessary to ensure that any resulting adverse noise and vibration impacts would be adequately mitigated. (Please see **NOISE APPENDIX A**, immediately following, for explanations of common noise terminology used herein.)

## 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

### City of El Centro General Plan

Policy 3.3 of the City of El Centro General Plan Noise Element requires "...mitigation measures to ensure that noise resulting from...construction project is reduced to an acceptable level." (El Centro 2004)

Table N-2 Noise Standards of the Noise Element sets the maximum acceptable noise levels for various types of land uses. Outdoor one-hour average noise levels may not exceed 60 dBA  $L_{eq}$  at rural and single-family residential zones, 65 dBA at multi-family residential zones, and 70 dBA at schools, libraries, churches, hospitals, nursing homes and parks.

Table N-3 Noise/Land Use Compatibility Matrix of the Noise Element delineates noise levels that are acceptable in land use planning. In residential areas, and at schools, libraries, churches, hospitals and nursing homes, noise levels are considered acceptable up to 70 dBA  $L_{dn}$  or CNEL.

### City of El Centro Noise Ordinance

Chapter 17.1 of the City of El Centro Code of Ordinances (El Centro 2006) is entitled Noise Abatement and Control. Section 17.1-4 sets limits for noise at the property line of the noise source (except for construction noise). These limits are described in Table 1 Exterior Noise Level Limits, and summarized in **NOISE Table 1** below:

**NOISE Table 1**  
**Property Line Noise Limits**

| Receptor Zone             | Daytime Limit<br>(dBA $L_{eq}$ ) | Nighttime Limit<br>(dBA $L_{eq}$ ) |
|---------------------------|----------------------------------|------------------------------------|
| Single-family Residential | 50                               | 45                                 |
| Commercial                | 60                               | 55                                 |
| Manufacturing             | 75                               | 70                                 |

Section 17.1-4 further specifies that the noise level limit at the boundary between two different zones is the arithmetic average of the limits for the two zones. If the existing ambient level already exceeds the limit in Table 1, the allowable level from a new source of noise shall be the ambient level minus 5 dBA (but not less than the level in Table 1).

Section 17.1-8 specifies limits for construction noise. Construction is prohibited entirely on Sundays and holidays, and is limited to the hours between 6 a.m. and 7 p.m. Monday through Saturday (§ 17.1-8(a)). Further, no construction noise may exceed 75 dBA for more than 8 hours during any 24-hour period, when measured at a residential property line (§ 17.1-8(b)).

### **Imperial County General Plan Noise Element**

Section IV.C of the General Plan Noise Element (Imperial County 1998b) includes Land Use Compatibility Guidelines to be used to evaluate potential noise impacts and provide criteria for findings of environmental impact. These guidelines categorize noise levels at residential land uses as “normally acceptable” up to 60 dBA  $L_{dn}$  or CNEL, and as “conditionally acceptable” up to 70 dBA  $L_{dn}$  or CNEL.

Section IV.C.2 of the Noise Element sets Property Line Noise Limits. Noise received at the property line of a receptor in a residential zone is limited to 50 dBA  $L_{eq}$  in the daytime, and 45 dBA  $L_{eq}$  at night.<sup>1</sup>

Section IV.C.3 of the Noise Element sets Construction Noise Standards. In the case of construction noise impacts at a sensitive receptor lasting only days or weeks, noise levels at the receptor shall not exceed 75 dBA  $L_{eq}$  when averaged over eight hours. In the case of longer-term construction, noise levels at the receptor shall not exceed 75 dBA  $L_{eq}$  when averaged over a one-hour period.

Section IV.C.4 of the Noise Element states that if the projected noise level at a sensitive receptor, including the project noise, will be within the “normally acceptable” levels stated in the Land Use Compatibility Guidelines, but will result in an increase of 5 dBA CNEL or greater, such an impact would be considered potentially significant, and additional mitigation must be considered. If the projected noise level at a sensitive receptor, including the project noise, will exceed the “normally acceptable” levels stated in the Land Use Compatibility Guidelines, and will result in an increase of 3 dBA CNEL or greater, such an impact will be considered potentially significant, and additional mitigation must be considered.

Section IV.D.8.c of the Noise Element suggests that, in the case of significant noise impacts on a single isolated receptor, appropriate mitigation may consist of construction modifications to the receptor, such as door and window modifications and installation of mechanical ventilation.

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<sup>1</sup> The limits are specified in terms of “average sound level,” which is defined to be  $L_{eq}$  (Imperial County 1998a, § 90701.00 A).

## **Imperial County Land Use Ordinance**

The Imperial County Land Use Ordinance (Imperial County 1998a) limits the level of any sound emanating from a property at the property line. For the El Centro Unit 3 Repower Project, which would be built on land zoned Manufacturing Light Industrial (IID 2006a, SPPE § 1.2.3; Table 6.2-1), this limit is 70 dBA (one hour average) (Imperial County 1998a, § 90702.00 A).

## **SETTING**

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### **PROJECT BACKGROUND**

IID proposes to repower the existing 44 MW El Centro Unit 3, a steam boiler unit, by installing a new General Electric Frame 7EA gas turbine generator with attendant heat recovery steam generator. All work will be performed within the existing El Centro Generating Station (ECGS) site, including all requisite connections to electric, water and natural gas lines.

### **EXISTING LAND USE**

The project site will comprise a portion of the ECGS, which currently consists of three power units. Unit 2 previously underwent a substantially identical repowering, also under Energy Commission exemption.

### **EXISTING NOISE LEVELS**

In order to predict the likely noise effects of the project on nearby sensitive receptors, the applicant commissioned an ambient noise survey of the area. The survey was conducted August 24 through 26, 2006, using commonly accepted techniques and equipment. The existing daytime noise environment is composed of traffic noise from local roads, including many trucks, aircraft overflights, and noises from birds and the nearby El Centro Naval Air Station. The nighttime noise environment is composed of traffic noise, the ECGS, and noise from dogs and cicadas (IID 2006a, SPPE § 6.7.2.2).

The applicant monitored ambient noise continuously for 25 hours in the rear yard of single-family residence at 1017 North 3<sup>rd</sup> Street, about 2,600 feet to the west of the project site (location LT-1). This house is part of a residential neighborhood representing the second-nearest residential receptor (IID 2006a, SPPE § 6.7.2.2; Table 6.7-3). Short term measurements (daytime and nighttime, one hour duration each) were also conducted at the four property lines of the ECGS (locations PL-1 through PL-4) and at two other residential locations, one a single-family residence at 2161 North Dogwood Road, approximately 2,300 feet to the northeast and representing the nearest residential receptor (location ST-1), and one a single-family residence at 76 East Villa Avenue, approximately 2,700 feet to the east of the site (location ST-2) (IID 2006a, SPPE § 6.7.2.2; Table 6.7-2).

Refer to **NOISE Figure 1** for the location of these monitoring sites.

**NOISE Table 2** is a summary of the applicant's ambient noise measurement results (IID 2006a, SPPE Tables 6.7-2 and 6.7-3).

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

| Measurement Site | Measured Noise Levels, dBA |                 |                 |
|------------------|----------------------------|-----------------|-----------------|
|                  | L <sub>eq</sub>            | L <sub>90</sub> | L <sub>50</sub> |
| LT-1             | 54*                        | 49**            | 53**            |
| ST-1***          | 62/60                      | 42/53           | 54/54           |
| ST-2***          | 59/51                      | 42/42           | 45/46           |
| PL-1***          | 55/52                      | 45/50           | 46/52           |
| PL-2***          | 69/64                      | 68/64           | 69/64           |
| PL-3***          | 60/61                      | 41/56           | 47/57           |
| PL-4***          | 51/52                      | 48/46           | 50/50           |

\*Nighttime average \*\*25-hour average \*\*\*Daytime/Nighttime Source: IID 2006a, SPPE Tables 6.7-2 and 6.7-3

In general, the background noise environment in the vicinity of the project site is fairly noisy, typical of an urban neighborhood. Due to the relatively constant nature of power plant noise, Energy Commission staff typically compares power plant noise to the ambient background (L<sub>90</sub>) noise level, averaged over the quietest four consecutive hours of the night.<sup>2</sup> Staff could not determine this four-hour average nighttime background level at LT-1, however, the application reported only a single 25-hour average value for L<sub>90</sub> and L<sub>50</sub> and a single 9-hour nighttime average value for L<sub>eq</sub> (IID 2006a, SPPE § 6.7.2.2; Table 6.7-3). Staff therefore issued Data Request No. 8, asking for the hourly average values of L<sub>eq</sub> and L<sub>90</sub> at LT-1 (CEC 2006f).

Additionally, the application appears somewhat confusing with regards to which is the nearest sensitive noise receptor, and the project's likely noise impacts on it. Sections 6.7.2 and 6.7.2.2 describe the one single-family residence 2,300 feet NE of the project site (ST-1) as the nearest sensitive receptor. Section 6.7.4.2 and Table 6.7-7, however, treats the residence 2,600 feet W of the project site (LT-1) as the nearest sensitive receptor. In order to correctly understand the situation, staff issued Data Request No. 9.

The applicant's Data Response No. 8 (IID 2006k) reported the hourly values for LT-1. These values are summarized in **NOISE Table 3**:

<sup>2</sup> Nighttime noise is examined because that is when most people are sleeping, and noise impacts would be greatest. Background level is used as a comparison because power plant noise, being unusually constant and unvarying, will typically supplant the background level. A four-hour average is employed to smooth over short-term anomalies.

**NOISE Table 3  
Hourly Noise Levels at LT-1**

| Hours       | Leq (dBA) | L90 (dBA) |
|-------------|-----------|-----------|
| 1100 - 1200 | 53        | 44        |
| 1200 - 1300 | 55        | 45        |
| 1300 - 1400 | 56        | 46        |
| 1400 - 1500 | 55        | 46        |
| 1500 - 1600 | 53        | 45        |
| 1600 - 1700 | 60        | 46        |
| 1700 - 1800 | 58        | 47        |
| 1800 - 1900 | 66        | 57        |
| 1900 - 2000 | 60        | 50        |
| 2000 - 2100 | 59        | 49        |
| 2100 - 2200 | 58        | 49        |
| 2200 - 2300 | 53        | 49        |
| 2300 - 0000 | 54        | 49        |
| 0000 - 0100 | 58        | 49        |
| 0100 - 0200 | 57        | 52        |
| 0200 - 0300 | 52        | 50        |
| 0300 - 0400 | 50        | 46        |
| 0400 - 0500 | 51        | 48        |
| 0500 - 0600 | 52        | 48        |
| 0600 - 0700 | 50        | 47        |
| 0700 - 0800 | 54        | 46        |
| 0800 - 0900 | 55        | 43        |
| 0900 - 1000 | 52        | 43        |
| 1000 - 1100 | 57        | 45        |

Source: IID 2006k, Data Response 8    Shaded = Nighttime Hours

Averaging these figures during the quietest four-hour period, from 3:00 a.m. to 7:00 a.m., yields an average  $L_{eq}$  of 50.9 dBA and an average  $L_{90}$ , or background level, of 47.4 dBA.<sup>3</sup>

## IMPACTS

### CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA requires that significant environmental impacts be identified, and that such impacts be eliminated or mitigated to the extent feasible. Section XI of Appendix G of CEQA Guidelines (Cal. Code Regs., tit. 14, App. G) sets forth some characteristics that may signify a potentially significant impact. Specifically, a significant effect from noise may exist if a project would result in:

- exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies;

<sup>3</sup> Noise levels are averaged logarithmically.

- 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 |
|---|--------------------------------|--|------------------------------|-----------|
| NOISE – Would the project result in:  |                                |  |                              |           |
| A. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?   |                                | X  |                              |           |
| B. Exposure of persons to or generation of excessive 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 project will last approximately 20 months (IID 2006a, SPPE §§ 1.3, 2.1.4, 6.7.3.2).

Applicable LORS limit the loudness of construction noise to 75 dBA  $L_{eq}$  when measured at the nearest sensitive receptor (City of El Centro Noise Ordinance § 17.1-8(b), Imperial County General Plan Noise Element § IV.C.3). Further, construction work is limited to Monday through Saturday, 6:00 a.m. through 7:00 p.m., and is prohibited on Sundays and holidays (City of El Centro Noise Ordinance § 17.1-8(a)).

The applicant has estimated construction noise levels at residential receptors (IID2006a, SPPE Table 6.7-4). These levels are compared to daytime ambient levels in **NOISE Table 4**:

**NOISE Table 4**  
**Summary of Estimated Construction Noise Impacts, dBA L<sub>eq</sub>**

| Measurement Site | Measured Ambient Level* | Predicted Construction Noise Level** | Cumulative | Change from Ambient |
|------------------|-------------------------|--------------------------------------|------------|---------------------|
| LT-1             | 56                      | 54                                   | 58         | +2                  |
| ST-1             | 62                      | 54                                   | 63         | +1                  |
| ST-2             | 59                      | 52                                   | 60         | +1                  |

\*Source: IID2006a, Table 6.7-2 and IID2006k, Data Response 8; hours from 6 a.m. to 7 p.m. \*\*Source: IID2006a, Table 6.7-4

The applicant states that most construction activities will take place during the hours of 6:00 a.m. to 7:00 p.m. Monday through Saturday. Some construction work may be necessary during other hours, but such work will comply with the nighttime noise level standards for residential uses of 45 dBA (IID2006a, § 6.7.3.2). From **NOISE Table 4** above, it is seen that construction noise levels will be considerably lower than the limit of 75 dBA stated in the City Noise Ordinance and the County Noise Element, and thus in compliance with these LORS.

**Linear Facilities**

All construction of linear facilities will occur within the ECGS boundaries. Such construction noise has been accounted for in the above estimates.

**Pile Driving Noise**

A potential source of significant construction noise is pile driving. In the event that pile driving is required, the applicant has estimated its noise impacts (IID2006a, Table 6.7-5). Such noise is predicted to reach levels of 63 to 64 dBA L<sub>eq</sub> at the three residential locations, and 68 to 69 dBA L<sub>max</sub>. These levels would comply with the LORS limit of 75 dBA for construction noise (Imperial County Noise Element § IV.C.3). As discussed above, the applicant has committed to performing all noisy construction work during daytime hours, as required by the City of El Centro Noise Ordinance § 17.1-8(a).

**Steam Blows**

Typically, the loudest noise encountered during construction, inherent in building any project incorporating a steam turbine, is created by the steam blows. After erection and assembly of the feed water and steam systems, the piping and tubing that comprises the steam path has accumulated dirt, rust, scale and construction debris such as weld spatter, dropped welding rods and the like. If the plant were started up without thoroughly cleaning out these systems, all this debris would find its way into the steam turbine, quickly destroying the machine.

In order to prevent this, before the steam system is connected to the turbine, the steam line is temporarily routed to the atmosphere. Traditionally, high pressure steam is then raised in the heat recovery steam generator or a temporary boiler and allowed to escape to the atmosphere through the steam piping. This flushing action, referred to as a steam blow, is quite effective at cleaning out the steam system. A

series of short steam blows, lasting two or three minutes each, is performed several times daily over a period of two or three weeks. At the end of this procedure, the steam lines are connected to the steam turbine, which is then ready for operation. Alternatively, high pressure compressed air can be substituted for steam.

Steam blows, if unsilenced, can typically produce noise levels as loud as 129 dBA at a distance of 50 feet; this would amount to roughly 97 dBA at ST-1, the nearest sensitive receptor 2,300 feet distant. With a silencer installed on the steam blow piping, noise levels are commonly attenuated to 89 dBA at 50 feet; this would yield approximately 57 dBA at ST-1. The noise from an unmuffled steam blow would violate the applicable LORS; a muffled blow would not and in fact, would be barely noticeable over the ambient  $L_{eq}$  levels at the nearby residences (see **NOISE Table 4** above). In order to ensure that steam blow noise does not exceed LORS limits, staff has proposed Condition of Certification **NOISE-3** below.

### **Worker Effects (construction)**

The applicant acknowledges the need to protect construction workers from noise hazards. IID will ensure that all construction contractors adhere to Cal-OSHA regulations (IID2006a, § 6.7.3.2).

### **Power Plant Operation**

Both the ECGS and the residences at LT-1 lie within the El Centro City Limits, while the residences at ST-1 and ST-2 lie within Imperial County. As described above, the most stringent applicable LORS pertaining to the City of El Centro is the City Noise Ordinance, which limits nighttime noise at residences to 45 dBA  $L_{eq}$ . Where the existing ambient noise regime exceeds this level, the limit for new noise sources is the existing ambient minus 5 dBA (El Centro 2006, § 17.1-4). Since the power plant can be expected to operate long into the night while serving summertime air conditioning loads in the IID service area, comparison with this nighttime limit is appropriate.

The primary noise sources anticipated from the facility include the gas turbine generator, its air inlet and exhaust stack, and various auxiliary components. In the case of the El Centro Unit 3 Repower Project, predicted project noise at LT-1 is 48 dBA  $L_{eq}$  (IID2006a, Table 6.7-7). As described in the application, the nighttime average ( $L_{eq}$ ) ambient noise level at LT-1 is 54 dBA (IID2006a, Table 6.7-3), which exceeds the limit stated in § 17.1-4 of the Noise Ordinance. The permissible limit thus becomes the ambient minus 5 dBA, or 49 dBA. The project is thus predicted to comply with this limit.

Residences at ST-1 and ST-2 lie within Imperial County, outside the El Centro City Limits. The most stringent Imperial County LORS is the General Plan Noise Element, which limits property line noise limits at residential receptors to 45 dBA  $L_{eq}$  nighttime (§ IV.C.2). When the ambient noise level, however, is equal to or exceeds this property line noise standard, the increase of the existing or proposed noise shall not exceed 3 dB  $L_{eq}$ . The existing ambient level at residential receptor ST-1 is 60 dBA  $L_{eq}$  (from **NOISE Table 2**, above). Adding the projected project noise level of 48 dBA (IID2006a, Figure 6.7-4) to this ambient level yields 60 dBA, or no increase.

This constitutes compliance with the Noise Element. The existing ambient level at residential receptor ST-2 is 51 dBA  $L_{eq}$  (from NOISE Table 2, above). Adding the projected project noise level of 45 dBA (IID2006a, Figure 6.7-4) to this ambient level yields 52 dBA, an increase of one dBA. This also constitutes compliance with the Noise Element.

### **Worker Effects (operation)**

The applicant recognizes the need to protect plant operating and maintenance personnel from noise hazards, and has committed to comply with applicable LORS (IID2006a, § 6.7.4.3). 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.

## **B. Excessive Vibration: No Impact**

### **General Construction**

A potential source of vibration during construction is pile driving. The gas turbine generator foundations may require driven piles. Due to the distances involved to the nearest sensitive receptors (residences over 2,300 feet distant), staff considers it highly unlikely that vibration from pile driving would be perceptible.

### **Power Plant Operation**

The primary source of vibration associated with operation of a power plant is the turbine generators. The plant's gas turbine generator 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 any adjacent land uses.

## **C. Permanent Increase in Ambient Noise Level: Less Than Significant with Mitigation Incorporated**

### **Power Plant Operation**

During its operating life, the El Centro Unit 3 Repower Project 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 (IID2006a, § 6.7.4.1; Tables 6.7-6 and 6.7-7). Calculated project noise emissions at sensitive residential receptors are presented in the application (IID2006a, § 6.7.4.2; Table 6.7-7; Figure 6.7-4). These values are summarized in **NOISE Table 5**:

**NOISE Table 5  
Calculated Project Noise Levels**

| Receptor                      | Calculated Noise Level (dBA L <sub>eq</sub> ) |
|-------------------------------|---|
| LT-1 (residences to west)     | 48  |
| ST-1 (residence to northeast) | 48  |
| ST-2 (residence to east)      | 45  |

Source: IID2006a, § 6.7.4.2; Table 6.7-7 and Figure 6.7-4

As explained above, in order to evaluate the significance of noise impacts on sensitive receptors, Energy Commission staff compares project noise levels to the ambient background (L<sub>90</sub>) level, averaged over the four quietest consecutive hours of the night. This comparison is shown in **NOISE Table 6**:

**NOISE Table 6  
Noise impacts on Sensitive Receptors (dBA)**

| Receptor | Ambient           | Project <sup>1</sup> | Cumulative | Change |
|----------|-------------------|----------------------|------------|--------|
| LT-1     | 47 <sup>2,3</sup> | 48                   | 51         | +4     |
| ST-1     | 53 <sup>4</sup>   | 48                   | 54         | +1     |
| ST-2     | 42 <sup>4</sup>   | 45                   | 47         | +5     |

<sup>1</sup>Source: IID2006a, Table 6.7-7 and Figure 6.7-4

<sup>2</sup>L<sub>90</sub>; average of four quietest consecutive nighttime hours.

<sup>3</sup>Source: IID2006k, Data Response 8

<sup>4</sup>Source: IID2006a, Table 6.7-2

As can be seen from the table, the increase above ambient noise levels at all sensitive receptors is no greater than the 5 dBA lower threshold that staff employs to evaluate significant adverse noise impacts. Staff therefore concludes that the El Centro Unit 3 Repower Project, if built and operated as proposed, will cause no significant adverse noise impacts. In order to ensure this, staff proposes Condition of Exemption **NOISE-2**, below.

**Linear Facilities**

Natural gas and water lines are buried, and thus inaudible. Electric transmission lines emit low levels of noise, due to corona effect, which increases with moisture in the air. Even when the air is saturated with moisture (a rare event in this climate), corona noise is typically inaudible beyond the line's right of way. Further, all linear connections to the El Centro Unit 3 Repower Project will lie within the boundaries of the ECGS. Therefore, staff believes the project's linear facilities would all be effectively silent to any sensitive receptors. 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 project 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.

**D. Substantial Temporary Increase in Noise Level: Less Than Significant with Mitigation Incorporated**

**General Construction Noise**

In order to identify any significant adverse impacts, staff compares the projected construction noise levels to the ambient levels. In this case, since construction will take place during daytime hours, its noise 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.

Construction of the El Centro Unit 3 Repower Project is anticipated to take 20 months. The applicant has predicted construction noise levels due to general construction activities, and projected their impacts on sensitive receptors (IID2006a, § 6.7.3.2; Table 6.7-4). Projected noise levels and their impacts are summarized in **NOISE Table 7**:

**NOISE Table 7  
Construction Noise Impacts on Sensitive Receptors**

| Receptor | Ambient, dBA<br>(Daytime $L_{eq}$ ) | Construction Noise<br>Level, dBA*** | Cumulative,<br>dBA | Increase |
|----------|-------------------------------------|-------------------------------------|--------------------|----------|
| LT-1     | 56*                                 | 54                                  | 58                 | +2       |
| ST-1     | 62**                                | 54                                  | 63                 | +1       |
| ST-2     | 59**                                | 52                                  | 60                 | +1       |

\*Source: IID2006k, Data Response 8; hours from 6 a.m. to 7 p.m.

\*\*Source: IID2006a, Table 6.7-2

\*\*\*Source: IID2006a, Table 6.7-4

Increases in noise level at residences of one to two dB would be barely noticeable, if not completely unnoticeable. General construction of the project will thus create no significant adverse noise impacts.

**Pile Driving**

Project construction may involve pile driving for the gas turbine generator foundation. Such work could produce noise levels at receptor location LT-1 of 63 dBA  $L_{eq}$  and 68 dBA  $L_{max}$ , and at receptor location ST-1 of 64 dBA  $L_{eq}$  and 69 dBA  $L_{max}$  (IID2006a, Table 6.7-5). The Imperial County Noise Element limits construction noise to 75 dBA (§ IV.C.3). Pile driving noise at these residences would be less than this limit. Given the short-term nature of pile driving (days, or a week or so), this noise should not result in significant adverse impacts.

## Steam Blows

As described above, steam blows performed with proper muffling would create noise levels at sensitive receptors of 57 dBA or less. Comparing this level with the day time ambient noise levels at the receptor locations shows only moderate increases:

**NOISE Table 8**  
**Steam Blow Noise Impacts on Sensitive Receptors**

| Receptor | Ambient, dBA<br>(Daytime $L_{eq}$ ) | Steam Blow Noise<br>Level, dBA*** | Cumulative,<br>dBA | Increase |
|----------|-------------------------------------|-----------------------------------|--------------------|----------|
| LT-1     | 55*                                 | 56                                | 59                 | +4       |
| ST-1     | 62**                                | 57                                | 63                 | +1       |
| ST-2     | 59                                  | 55                                | 60                 | +1       |

\*Source: IID2006k, Data Response 8; hours from 7 a.m. to 11 a.m.

\*\*Source: IID2006a, Table 6.7-2

\*\*\*Source: Staff estimate

Increases of one to four dBA for short durations during daytime hours would not constitute a significant adverse impact.

## Linear Facilities

Construction of the linear facilities would produce noise due to the operation of heavy equipment. Since all this work will take place inside the boundaries of the ECGS, and will be limited to daytime, and since all powered equipment will be properly muffled (IID2006a, § 6.7.6.1), no adverse impacts will be likely. In fact, this work would likely be inaudible at sensitive receptors.

### E. Airport Noise Impacts: No Impact

The proposed project is not sufficiently near an airport (the ECNAS) to be influenced by it; therefore there would be no impacts related to airports.

### F. Private Airstrip Impacts: No Impact

The proposed 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. The applicant has identified several residential and commercial projects in the immediate area. All these projects are farther from the El Centro Unit 3 Repowering Project than the existing residential uses that were considered in analyzing project noise impacts. For this reason, project noise impacts on these projects will be even less than on the existing residences. Additionally, since all these projects are nearly a mile or more away, construction noise is not likely to compound to any noticeable degree. Therefore, staff believes no cumulative noise impacts are likely for the project.

## CONCLUSIONS AND RECOMMENDATIONS

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Energy Commission staff concludes that the El Centro Unit 3 Repowering Project would comply with all applicable noise LORS and, if mitigated as proposed, would not result in significant adverse noise impacts, either direct or cumulative. In order to ensure the proposed mitigation is applied, staff recommends the following proposed Conditions of Exemption be adopted.

## 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, 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 El Centro Building 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 owner shall equip steam blow piping with a temporary silencer that quiets the noise of steam blows to no greater than 89 dBA measured at a distance of 50 feet. The project owner shall conduct steam blows only during the hours of 6:00 a.m. to 7:00 p.m., Monday through Saturday.

**Verification:** At least fifteen (15) days prior to the first steam blow, the project owner shall submit to the City of El Centro Building Department drawings or other information describing the temporary steam blow silencer and the noise levels expected, and a description of the steam blow schedule.

## EXHIBIT 1 - NOISE COMPLAINT RESOLUTION FORM

|  |     |                 |
|--|-----|-----------------|
| El Centro Unit 3 Repower Project<br>(06-SPPE-2)                  |     |                 |
| <b>NOISE COMPLAINT LOG NUMBER</b> _____                          |     |                 |
| Complainant's name and address:                                  |     |                 |
| Phone number: _____  |     |                 |
| Date complaint received: _____<br>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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No comments have been received as of this writing.

## **REFERENCES**

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CEC2006f – CEC/M Dyas (37127) Data Requests 1 to 32 for the El Centro Unit 3 Repower Project. Dated 06/20/06. Submitted to CEC/Dockets 6/20/06.

El Centro 2004 – City of El Centro General Plan Noise Element, February 2004.

El Centro 2006 – City of El Centro Code of Ordinances, enacted January 4, 2006.

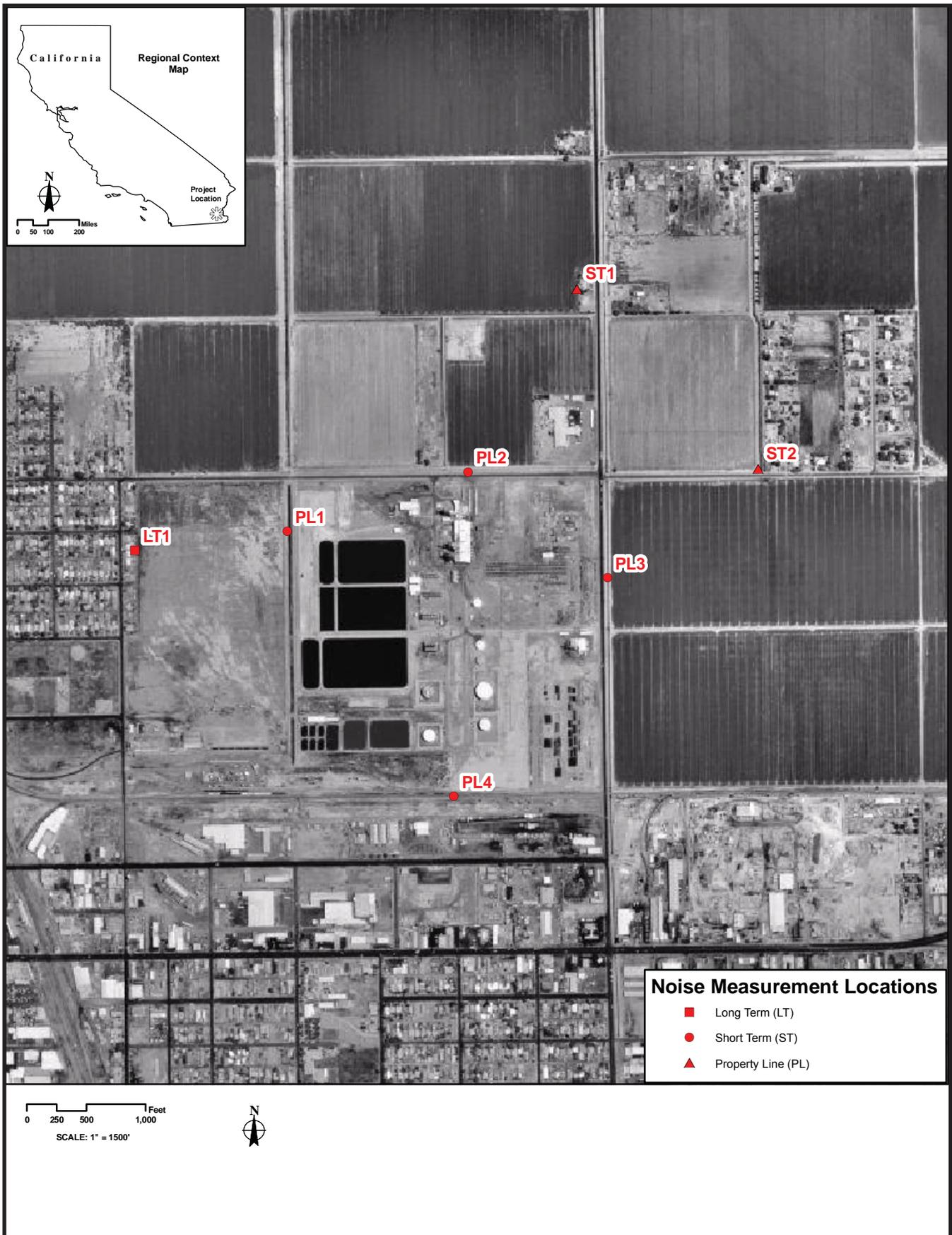
IID2006a – Imperial Irrigation District/J. Federowicz (36971) Submittal of the Application for Small Power Plant Exemption (Volumes 1 and 2) for the El Centro Unit 3 Repower Project Dated 05/17/06. Submitted to CEC/B.B. Blevins,/M. Dyas/Dockets on 05/19/06.

IID2006k – Imperial Irrigation District/J Diven (37409) First Round Data Responses Part 1. Dated 07/07/06. Submitted to CEC/Dockets 07/12/06.

Imperial County 1998a — Imperial County Land Use Ordinance, Title 9, Division 7: Noise Abatement and Control. Effective November 24, 1998.

Imperial County 1998b — Imperial County General Plan.

**NOISE AND VIBRATION - FIGURE 1**  
SPPE- El Centro Unit 3 Repower - Noise Measurement Locations



CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, SEPTEMBER 2006  
SOURCE: SPPE Figure 6.7-1

## 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<br/>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<br>Kitchen with Garbage Disposal Running | Loud                  |
| Freeway (100')   | 70                                       |   | Moderately Loud       |
| Vacuum Cleaner (100')  | 60                                       | Data Processing Center<br>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<br>Addition of Decibel Values |  |
|---|--|
| When two decibel values differ by:            | Add the following amount to the larger value |
| 0 to 1 dB                                     | 3 dB   |
| 2 to 3 dB                                     | 2 dB   |
| 4 to 9 dB                                     | 1 dB   |
| 10 dB or more                                 | 0  |
| Figures in this table are accurate to ± 1 dB. |  |

Source: Architectural Acoustics, M. David Egan, 1988

**Sound and Distance**

Doubling the distance from a noise source reduces the sound pressure level by 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<br>(Hrs/day) | A-Weighted Noise Level<br>(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

Alvin Greenberg, Ph.D.

## INTRODUCTION

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The purpose of the public health analysis section of this Initial Study is to determine if toxic air contaminants from construction and routine operation of the proposed El Centro Unit 3 Repower Project (El Centro) will have the potential to cause significant adverse public health impacts in the surrounding area. If potentially significant health impacts are identified, Energy Commission staff (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 the El Centro project along with discussions regarding selected checklist items addressing the topical areas of concern. It concludes with staff's recommended Condition of Exemption to monitor and mitigate the project.

## LAWS, ORDINANCES, REGULATION, AND STANDARDS

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**PUBLIC HEALTH Table 1**  
**Laws, Ordinances, Regulations, and Standards (LORS)**

| <u>Applicable Law</u>                                   | <u>Description</u>  |
|---|---|
| Federal   |   |
| Clean Air Act section 112 (42 U.S. Code section 7412)   | Requires new sources which emit more than ten tons per year of any specified hazardous air pollutant (HAP) or more than 25 tons per year of any combination of HAPs to apply Maximum Achievable Control Technology (MACT).  |
| State   |   |
| California Health and Safety Code section 41700         | This section states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property." |
| California Code of Regulations, Title 22, Section 60306 | Requires that whenever a cooling system uses recycled water in conjunction with an air conditioning facility and a cooling tower that creates a mist that could come into contact with employees or members of the public, a drift eliminator shall be used and chlorine, or other, biocides shall be used to treat the cooling system recirculating water to minimize the growth of Legionella and other micro-organisms.                    |
| Local   |   |
| Imperial County Air Quality Management District         | No rules but follows the ARB and South Coast Air Quality Management District's (SCAQMD) rule. For new or modified sources with best available toxics control technology (TBACT), the SCAQMD's significance criterion is 10 in a million but 1 in a million for those without such controls.   |

## 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 (skin) 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 (HRA) 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 the El Centro project 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 or OEHHA), and the length of the exposure period. Cancer risks for the individual carcinogens are added together to yield a total cancer risk for the source being considered. The conservative nature of the screening level assumptions used means that actual cancer risks would likely be lower or even considerably lower than those estimated.

A screening analysis was performed for the proposed El Centro project to assess the worst-case risks to public health as possible from its operation. It is staff’s standard procedure that whenever a screening analysis predicted 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**

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 (AQMD) determines that there is a significant health risk from a given facility. The Imperial County Air Quality Management District (ICAQMD), which has jurisdiction over Imperial County and hence the project area, does not have a rule designating a significant risk level. Instead, it follows the California Air Resources Board (CARB) and South Coast Air Quality Management District’s (SCAQMD) rule. For new or modified sources with best available toxics control technology (TBACT), the SCAQMD’s significance criterion is 10 in a million but 1 in a million for those without such controls. The state’s AQMD’s 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 the El Centro project from the public health perspective, as discussed by the applicant, the Imperial Irrigation District (IID or applicant). 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 (IID 2006a, Sections 6.2.1, 6.8.1, and 1.2), the proposed El Centro project site would be located on 4-acres within the existing El Centro Generating Station (ECGS) northeast of the City of El Centro. The project site is zoned Limited Use and Single Family Residential. Within a 3-mile radius of the proposed project location, land use is primarily cultivated farmlands and sparse residential. The property is flat with an elevation of approximately 50 feet below sea level.

As mentioned above, the location of sensitive receptors near any proposed project is an important factor in considering potential public health impacts. The nearest sensitive receptor is identified as the Washington School, located approximately 0.35 mile south of the proposed project location. The nearest residence is located approximately 1,340 feet (0.25 mile) west of the ECGS fence line, which makes it 0.5 mile west of the proposed project site location (IID 2006, Sections 6.8.1 and 6.1.1).

## **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 (IID 2006a, Section 6.1.1), the climate at the project site is a desert climate characterized by hot summers, mild winters, low humidity, and low precipitation. This climate is dominated by the influence of the Pacific high-pressure system, which is a semi-permanent, subtropical high-pressure system located over the Pacific Ocean. The San Jacinto and Santa Rosa mountain ranges to the northwest and west separate Imperial County from the coastal regions, and effectively remove moisture from the air flowing from the Pacific Ocean. In the summer months, the Pacific high blocks migrating storm systems, resulting in negligible precipitation. The Pacific high moves south during the winter months and frontal systems can move in, carrying the majority of the area's precipitation (annual average of approximately 3 inches). Early morning surface inversions occur almost daily in the Salton Sea valley area, which causes air stagnation. Solar heating usually breaks the inversions by noon. Prevailing winds are from the west and west-southwest.

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 El Centro site is within the jurisdiction of the ICAQMD (Imperial County Air Quality Management District).

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 Calexico, Imperial County in 1996, the area's background cancer risk from emitted air toxics was calculated as 443 in one million (CARB 2006). 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.

As discussed by the applicant (IID 2006a, Section 6.2), the total area of disturbance for this project would be 12.5 acres, all located within the existing ECGS site. A Phase I Environmental Site Assessment (ESA) was conducted at the proposed project site in 2006 in accordance with ASTM Standards to identify any indications of chemical contamination at the site (IID 2006a, Section 6.14.3.2 and Appendix K). The Phase I ESA found that "Recognized Environmental Conditions (REC's)" may exist on-site, and recommended that a Phase II investigation be conducted to further identify on-site contamination prior to construction. This investigation is currently being conducted by the applicant, and will be evaluated by staff when the results are received by the end of September 2006. This issue is addressed in greater detail in the **Waste Management** section of this Initial Study.

## **IMPACTS**

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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: |                                |  |                              |           |
| A. Construction   |                                | X  |                              |           |
| B. Operations   |                                | X  |                              |           |

## ANALYSIS AND DISCUSSION OF IMPACTS

The proposed El Centro project 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 (harmful) health impacts.

The basis for the outcomes noted in the checklist is discussed below.

### A. Construction: Less than Significant with Mitigation Incorporated

Potential risks to public health during construction may be associated with exposure to toxic substances in contaminated soil disturbed during site preparation, as well as from emissions from heavy equipment operation. Criteria pollutant impacts from such equipment and particulate matter from earth moving activities are examined in staff's **Air Quality** analysis.

As noted above and more fully discussed in the **Waste Management** section of this assessment, the possible presence of chemical contamination means that the site may need to be remediated prior to construction to reduce the risk of dust-related chemical exposure to insignificant. Depending on the results of the Phase II ESA, staff will require conditions of exemption to address this issue (see the **Waste Management** section).

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. Environmental Protection Agency (U.S. EPA) as hazardous air pollutants and by the CARB 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 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) and a cancer unit risk factor of  $3 \times 10^{-4}$  ( $\mu\text{g}/\text{m}^3$ )<sup>-1</sup> (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 CARB listed particulate emissions from diesel-fueled engines as a toxic air contaminant and approved SRP's recommendations regarding health effect levels.

Construction of the El Centro project is anticipated to take place over a period of 20 months (IID 2006a, Section 2.3). 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 **Appendix B**. The main sources would include trucks, excavators, cranes, welding machines, electric generators, and air compressors. The maximum carcinogenic risk from exposure to diesel emissions during the 20-month construction period was not identified in the SPPE application. However, 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 fence line as with this project (IID 2006a Page 6.1-30). Therefore, based upon staff's experience in other siting cases, and the fact that diesel emissions from construction vehicle will be mitigated as per Conditions of Exemption found in the **Air Quality** section of this Initial Study, staff concludes that a significant risk would be not posed to off-site receptors.

## **B. Operation: Less than Significant Impact with Mitigation Incorporated**

### **Emissions Sources**

The major emissions sources for the proposed El Centro project are the gas turbine and the ammonia slip-stream from the selective catalytic reduction (SCR)  $\text{NO}_x$  control system (IID 2006a, p 6.8-5). Secondary sources include the Unit 3 cooling tower. During operations, potential public health risks would be related to the products of natural gas combustion.

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 (IID 2006a, Section 6.8.2.3). 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 2** 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 2**  
**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         |             |                |                   | ✓                   | ✓                 |
| Arsenic         |             |                |                   | ✓                   | ✓                 |
| Benzene         |             |                | ✓                 | ✓                   | ✓                 |
| 1,3-Butadiene   |             |                | ✓                 | ✓                   |                   |
| Ethylbenzene    |             |                |                   | ✓                   |                   |
| Hexane          |             |                |                   | ✓                   |                   |
| Formaldehyde    |             |                | ✓                 | ✓                   | ✓                 |
| Naphthalene     | ✓           | ✓              | ✓                 | ✓                   |                   |
| PAHs            | ✓           |                | ✓                 | ✓                   |                   |
| Propylene       |             |                |                   | ✓                   |                   |
| Propylene oxide |             |                | ✓                 | ✓                   | ✓                 |
| Toluene         |             |                |                   | ✓                   | ✓                 |
| Xylene          | ✓           | ✓              | ✓                 | ✓                   | ✓                 |

Source: IID 2006a, Table 6.8-1.

The next step in the health risk assessment process is to estimate the ambient concentrations of toxic substances in question. For the proposed El Centro project, air dispersion modeling was used to estimate the ambient concentrations of these substances. These 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 the 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 0.349. The chronic hazard index at the point of maximum impact is 0.00123 (IID 2006a Section 6.8.2.7). As **Public Health Table 3** shows, both of these acute and chronic hazard

indices are 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 3** is estimated to be 0.023 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 facility emissions.

**PUBLIC HEALTH Table 3  
Operation Hazard/Risk**

| Type of Hazard/Risk      | Hazard Index/Risk for Project | Standard Significance Level | Significant? |
|--------------------------|-------------------------------|-----------------------------|--------------|
| <b>Acute Noncancer</b>   | 0.349                         | 1.0                         | No           |
| <b>Chronic Noncancer</b> | 0.0012                        | 1.0                         | No           |
| <b>Individual Cancer</b> | 0.023x10 <sup>-6</sup>        | 10 x 10 <sup>-6</sup>       | No           |

Source: IID 2006a, Table 6.8-4

Staff has conducted an independent quantitative evaluation of the risk assessment results presented in the SPPE application using the CARB/OEHHA Hotspots Analysis and Reporting Program (HARP model; see **Public Health Figures 1 – 6** attached). Modeling files were provided by the applicant on CD-ROM which included meteorological data files as well as input files for the HARP model. The input files that were imported to staff's HARP model include:

- Transaction files (*ECGS3export.tra* for the Unit 3 analysis, *ECGS234export.tra* for the cumulative analysis). These files contain site-specific data for property boundary, on-site buildings for building downwash, stacks, and emissions.
- Receptor file (*ECGS3export.rec*) with sensitive receptors.
- Exposure pathway assumptions were obtained from the site parameters file (*ECGS234project.sit*).

All files evaluated seem reasonable and complete. Staff evaluated both the cumulative risk assessment results as well as the results for Unit 3 only. For cancer risk calculations staff used the "Derived (Adjusted) Method" and for chronic noncancer hazard calculations staff used the "Derived (OEHHA) Method," as was done in the SPPE application.

Staff used a 6000 m square grid with grid receptors spaced at 150 m increments. For the cumulative risk assessment, 1995 meteorological data were used as this scenario produced the highest maximum cancer risk values. For the Unit 3 risk assessment, 1991 meteorological data were used (1991 data produced the highest maximum cancer risk values under this scenario).

Staff assessed the proposed Unit 3 stack emissions plus ammonia slip emission plus cooling tower emissions. For the cumulative assessment, staff assessed Unit 3

stack emission plus the ammonia slip plus the cooling tower emission plus stack emissions from Units 2 and 4 and from two additional cooling towers.

**Public Health Table 4** is a comparison of the results obtained by staff with the results presented in the SPPE application. In all cases, staff's calculated cancer risks and hazard indices were similar to or less than those calculated by the applicant.

### Cooling Tower

In addition to being a source of potential toxic air contaminants, the possibility exists for bacterial growth to occur in the cooling tower, including Legionella. Legionella is a bacterium that 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.

**PUBLIC HEALTH Table 4  
Comparison of Calculated  
Operation Hazard/Risk**

| <b>Unit 3 Only</b> | <i>Maximally Impacted Receptor</i> |              | <i>Max Impacted Sensitive Receptor</i> |              |
|--------------------|------------------------------------|--------------|--|--------------|
|                    | <b>AFC</b>                         | <b>Staff</b> | <b>AFC</b>                             | <b>Staff</b> |
| Cancer Risk        | 2.3E-08                            | 1.5E-08      | 1.7E-08                                | 7.7E-09      |
| Chronic HI         | 0.0012                             | 0.0012       | 0.00061                                | 0.00058      |
| Acute HI           | 0.17                               | 0.15         | 0.014                                  | 0.014        |

| <b>Cumulative</b> | <i>Maximally Impacted Receptor</i> |              | <i>Max Impacted Sensitive Receptor</i> |              |
|-------------------|------------------------------------|--------------|--|--------------|
|                   | <b>AFC</b>                         | <b>Staff</b> | <b>AFC</b>                             | <b>Staff</b> |
| Cancer Risk       | 6.2E-07                            | 4.5E-07      | 3.3E-07                                | 1.9E-07      |
| Chronic HI        | 0.0055                             | 0.0040       | 0.0026                                 | 0.0020       |
| Acute HI          | 0.40                               | 0.21         | 0.033                                  | 0.031        |

Legionella can grow symbiotically with other bacteria and can infect protozoan hosts. 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 U.S. EPA published an extensive review of Legionella in a human health criteria document in 1999 and noted that Legionella may propagate in biofilms (collections of microorganisms surrounded by slime they secrete, attached to either inert or living surfaces) and that aerosol-generating systems such as cooling towers can aid in the transmission of Legionella from water to air. The U.S. EPA has inadequate quantitative data on the infectivity of Legionella in humans to prepare a dose-response evaluation. Therefore, sufficient information is not available to support a quantitative characterization of the threshold infective dose of Legionella.

Consequently, the presence of even small numbers of Legionella bacteria is presumed to present a risk, however small, of disease in humans.

In 2000, the Cooling Technology Institute (CTI) issued a report and guidelines for the best practices for control of Legionella. The CTI found that 40-60 percent of industrial cooling towers tested were found to contain Legionella. More recently, staff has received a 2005 report of testing in cooling towers in Australia that found the rate of Legionella presence in cooling tower waters to be extremely low, approximately three to six percent. The cooling towers all had implemented aggressive water treatment and biocide application programs similar to that required by proposed Condition of Exemption **Public Health-1**. 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 of high-efficiency mist eliminators on cooling towers, and the overall general control of microbiological populations.

Good preventive maintenance is very important in the efficient operation of cooling towers and other evaporative equipment. Preventive maintenance includes having effective drift eliminators, periodically cleaning the system if appropriate, maintaining mechanical components in working order, and maintaining an effective water treatment program with appropriate biocide concentrations. Staff notes that most water treatment programs are designed to minimize scale, corrosion, and biofouling and not to control Legionella. The efficacy of any biocide in ensuring that bacterial and in particular Legionella growth, is kept to a minimum is contingent upon a number of factors including but not limited to proper dosage amounts, appropriate application procedures and effective monitoring.

In order to ensure that Legionella growth is kept to a minimum, thereby protecting both nearby workers as well as members of the public, staff has proposed Condition of Exemption **Public Health-1**. The condition would require the project owner to prepare and implement a biocide and anti-biofilm agent monitoring program to 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 biofilm removal, the chances of Legionella growing and dispersing would be reduced to an insignificant level.

## CUMULATIVE IMPACTS

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The applicant's cumulative HRA, consisting of emission sources from Unit 3 and Unit 4 on-site, also showed insignificant risks and hazard. Staff's independent assessment concurs with that conclusion. The maximum impact location due to the proposed El Centro Unit 3 Repower Project would theoretically be the highest risk and hazard possible. Even at this location, staff does not expect any significant change in lifetime risk to any person, and the increase of 0.023 in a million (as found in the SPPE

application) 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 El Centro Unit 3 Repower Project to be either significant or cumulatively considerable.

The worst-case chronic noncancer health impact from the El Centro project (of 0.0012 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 0.17 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.

## CONCLUSIONS

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Staff has analyzed potential public health risks associated with construction and operation of the proposed El Centro Unit 3 Repower Project. Staff does not expect there to be any significant adverse cancer, or short or long-term noncancer health effects from project emissions if the project owner implements the mitigation procedures described in the SPPE application, staff's Initial Study Air Quality section, and staff's proposed Public Health Condition of Exemption.

## PROPOSED CONDITIONS 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 but in either case, the Plan must include sampling and testing for the presence of Legionella bacteria at least every six months. After two years of power plant operations, the project owner may ask the Imperial County Public Health Department to re-evaluate and revise the Legionella bacteria testing requirement. The Project Owner shall also provide a report detailing the results of all biocide monitoring tests whenever a test shows exceedence of acceptable levels (as defined in the Cooling Water Management Plan).

**Verification:** At least 60 days prior to the commencement of cooling tower operations, the Cooling Water Management Plan shall be provided to the Imperial County Public Health Department for review and approval. Not Later than five business days after an exceedence of acceptable levels is documented, a report shall be provided to the Imperial County Health Department.

## REFERENCES

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CARB 2006. California Air Resources Board. Annual Toxics Summaries, <http://www.arb.ca.gov/adam/toxics/toxics.html>.

IID 2006a. Application for Small Power Plant Exemption for the El Centro Unit 3 Repower Project. Submitted to the California Energy Commission in May 2006.

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.

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.

Figure 1. El Centro cancer risk isopleths/1991 met & Unit 3 only

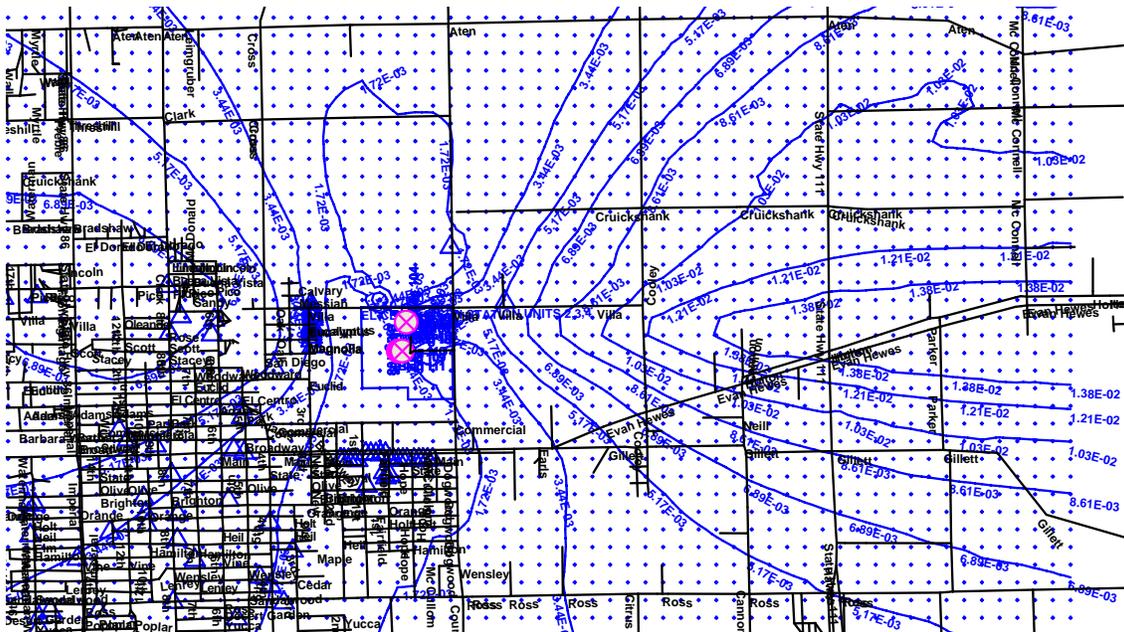


Figure 2. El Centro Chronic HI contours/1991 met & Unit 3 only

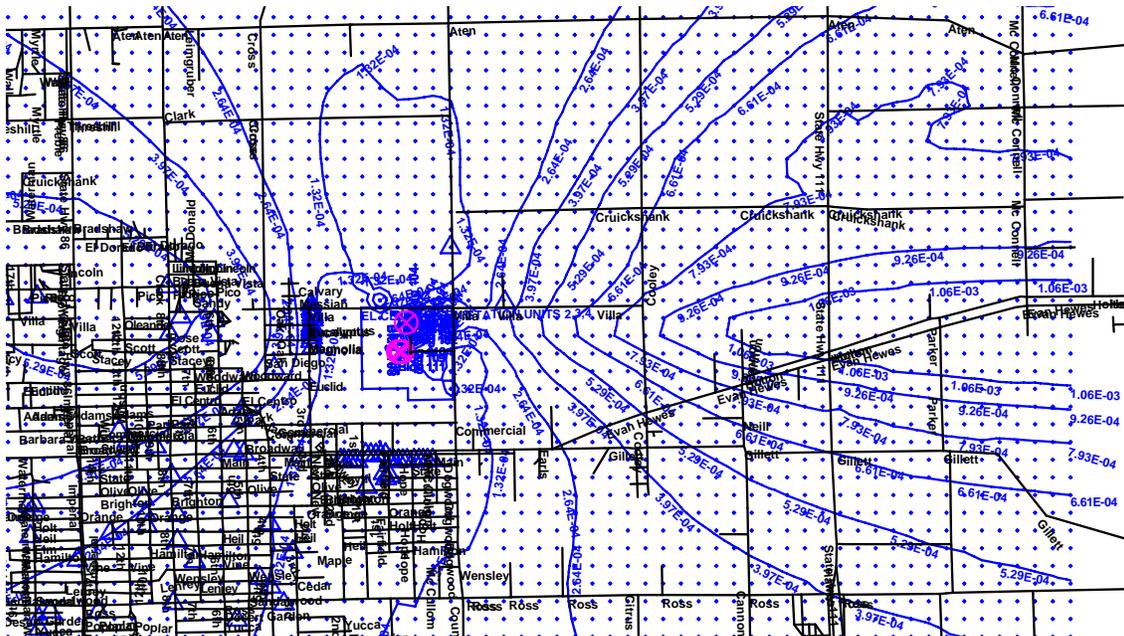


Figure 3. El Centro acute HI contours/1991 met & Unit 3 only

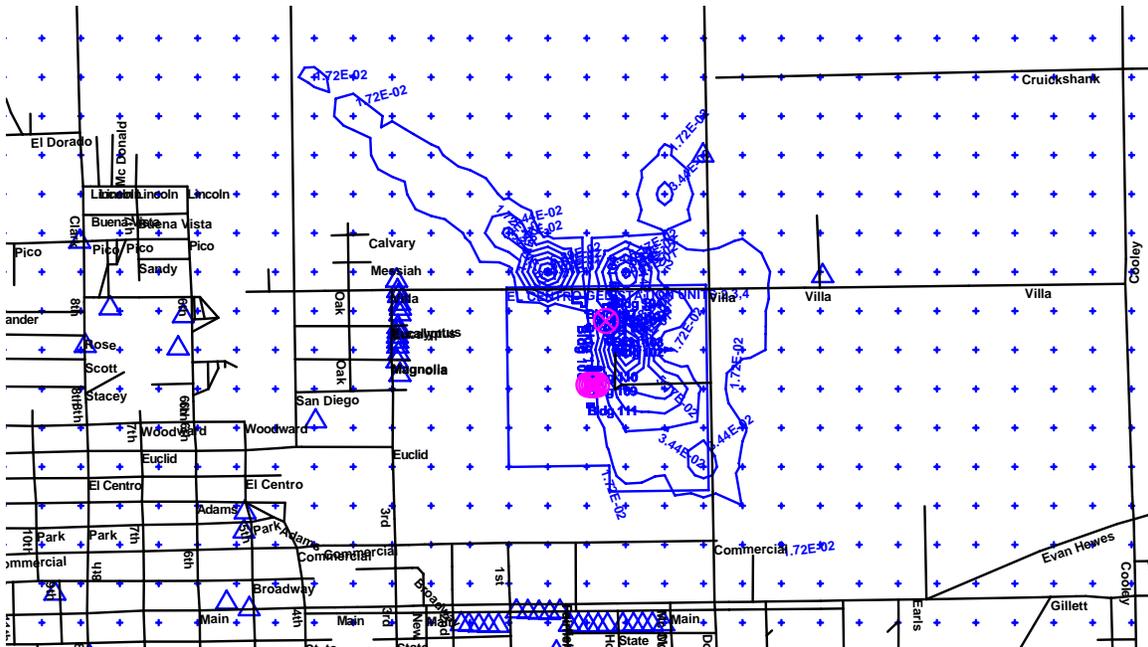


Figure 4. El Centro cancer risk isopleths/1995 met & All sources

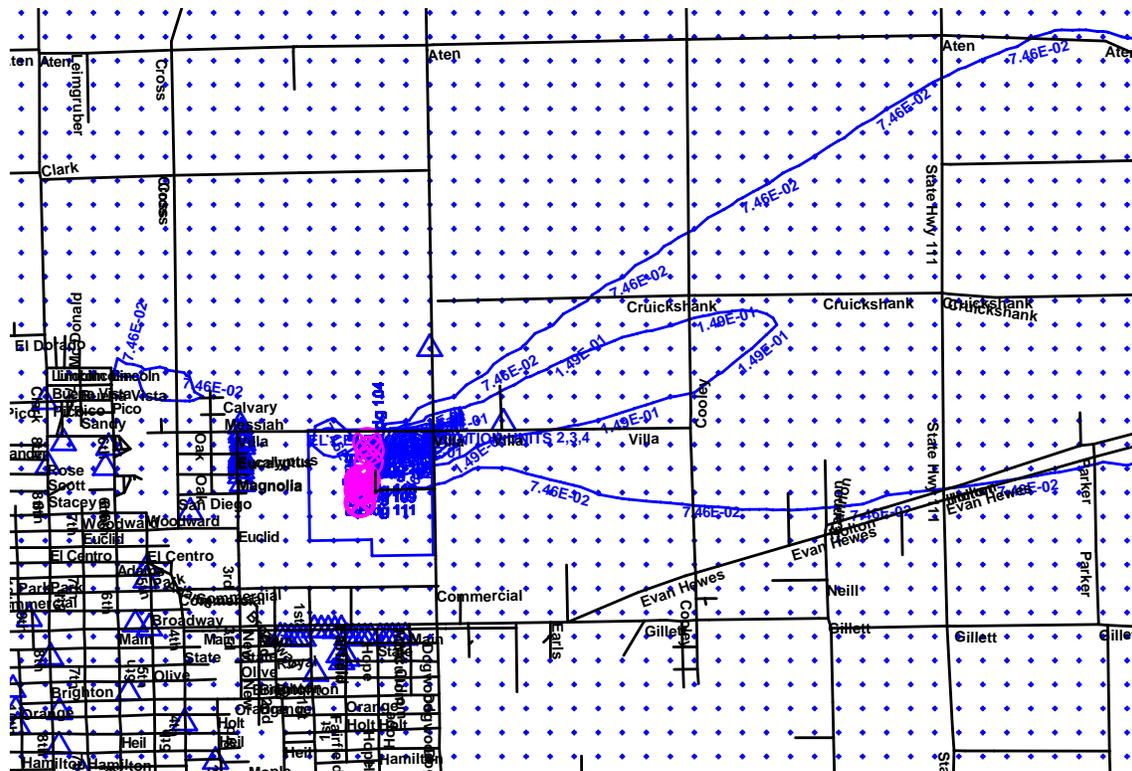


Figure 5. El Centro Chronic HI isopleths/1995 met & All sources

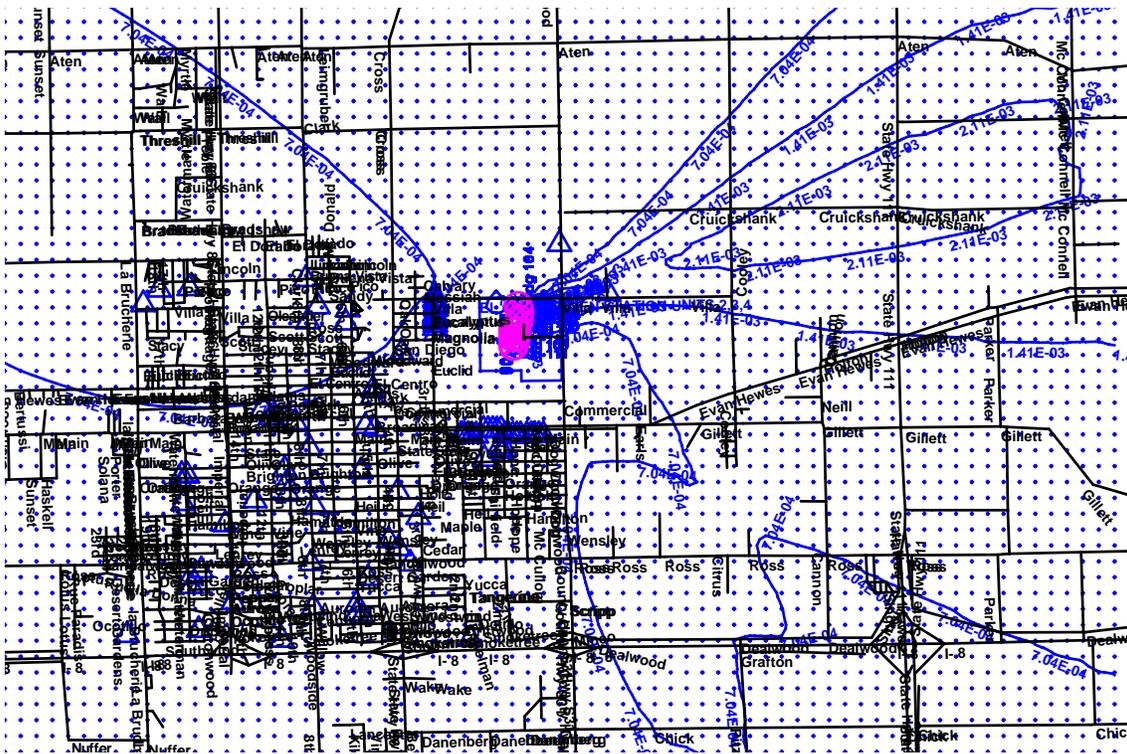
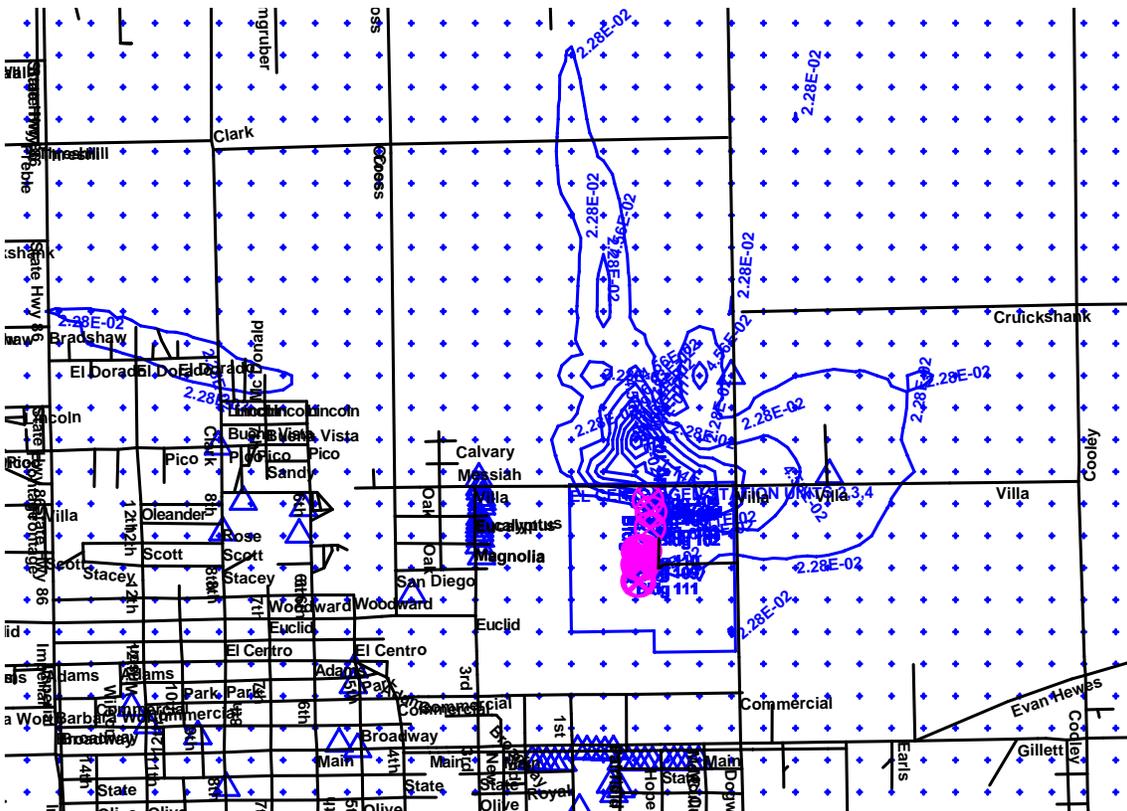


Figure 6. El Centro Acute HI isopleths/1995 met & All sources



# SOCIOECONOMICS

Joseph Diamond, Ph. D.

## 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). Direct, indirect, induced, and cumulative impacts are also included. Staff discusses the estimated impacts of the construction and operation of the El Centro Unit 3 Repower Project on local communities, community resources, and public services. The El Centro Unit 3 Repower Project would be owned and operated by Imperial Irrigation District (IID or applicant), 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 at the state level 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 within the City of El Centro, Imperial County. Imperial County population was 142,361 in 2000 and is projected to be 214,386 in 2020. The Imperial County population growth rate from 2000-2020 is projected to be higher than the statewide growth rate over that time period. Riverside County population was 1,548,387 in 2000 and is projected to be 2,675,648 in 2020, which is above the statewide growth rate over that time period. San Diego County population was 2,813,833 in 2000 and is projected to be 3,633,572 in 2020 which is slightly lower than the statewide growth rate over that time period (IID 2006a). **SOCIOECONOMICS Table 1** shows the historical and projected populations for the three county study areas and the state.

**SOCIOECONOMICS Table 1**  
**Historical and Projected Populations**

| Area                | 1990<br>Population | 2000<br>Population | 2005<br>Population | 2020<br>Population |
|---------------------|--------------------|--------------------|--------------------|--------------------|
| Imperial County     | 109,303            | 142,361            | 161,800            | 214,386            |
| Riverside County    | 1,170,413          | 1,545,387          | 1,877,000          | 2,675,648          |
| San Diego<br>County | 2,498,016          | 2,813,833          | 3,051,280          | 3,633,572          |
| California          | 29,758,213         | 33,871,648         | 36,810,358         | 43,851,741         |

Source: IID 2006a.

**SOCIOECONOMICS Table 2** and **SOCIOECONOMICS Figure 1** shows the minority and below poverty level populations within the one mile and six-mile radius of the proposed project, Imperial County, Riverside County and the state.

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

| Area             | % Minority | % Persons below poverty level |
|------------------|------------|-------------------------------|
| One-mile radius  | 95.66      | 40.34                         |
| Six-mile radius  | 78.80      | 20.48                         |
| Imperial County  | 80         | 23                            |
| Riverside County | 49         | 14                            |
| San Diego County | 45         | 12                            |
| California       | 53         | 14                            |

Source: IID 2006a, California Energy Commission Statewide Transmission & Power Plant Maps 2006, Census 2000 PL-171 Data-Matrix PL2.

The minority population within one-mile of the site is 95.66 percent which is greater than the 80 percent minority population of Imperial County and more than the state. The population below the poverty level is 40.34 percent within one mile of the site, which is higher than the 23 percent for Imperial County and more than that of the state.

The minority population within six miles of the site is 78.80 percent which is somewhat lower than the 80 percent minority population of Imperial County but more than the state. The population below the poverty level is 20.48 percent within six miles of the site, which is lower than the 23 percent for Imperial County and 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 Imperial County is higher than the unemployment rate for the state.

**SOCIOECONOMICS Table 3: Employment Data December 2005**

| Area             | Labor Force | Employment | Unemployment | Unemployment Rate (%) |
|------------------|-------------|------------|--------------|-----------------------|
| Imperial County  | 62,700      | 54,500     | 8,300        | 13.1                  |
| Riverside County | 860,100     | 824,100    | 36,000       | 4.2                   |
| San Diego County | 1,519,200   | 1,464,000  | 55,200       | 5.5                   |
| California       | 17,460,000  | 16,951,800 | 853,300      | 4.8                   |

Source: EDD 2005 (revised not seasonally adjusted).

Data from the El Cento Unit 3 Repower Project Small Power Plant Exemption (SPPE) application (Table 6.12-1) for 2004 shows that the highest employment sector in Imperial County is local government at 23 percent followed by the trade, transport, and utilities sector, and the farming sector, both at 20 percent. The labor pool is largely located in Imperial County with the rest coming from parts of Riverside County and San Diego County (IID 2006a). This area has a large population, including a December 2005 civilian labor force of 2,442,000 with adequate members of the trades required for construction of an energy facility.

## PROJECT WORK FORCE

### Construction Work Force

According to the El Centro Unit 3 Repower application, construction of the El Centro Unit 3 Repower Project would require 20 months of labor, average 73 workers on-site, and require a maximum of 98 workers during the tenth and eleventh (peak) months of construction. The tentative schedule would begin in September 2007, with completion in April 2009 (11D 2006a).

**SOCIOECONOMICS Table 4** shows the distribution of workers by craft and month required for the construction. **SOCIOECONOMICS Table 5** shows the annual averages, 2001 and 2008 for the trades in Imperial County, and the maximum needed for project construction per month. According to the application and labor data obtained from the EDD, there is generally sufficient labor force available in Imperial County, but additional labor force is available from portions of Riverside and San Diego Counties to find the required construction trades as needed.

**SOCIOECONOMICS Table 4**  
**Project Monthly Construction Labor by Craft**

| Job Category/Month    | 1         | 2         | 3         | 4         | 5         | 6         | 7         | 8         | 9         | 10        | 11        | 12        | 13        | 14        | 15        | 16        | 17        | 18        | 19        | 20        |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Boilermakers          |           |           |           |           |           |           |           | 4         | 8         | 12        | 12        | 12        | 12        | 8         | 4         |           |           |           |           |           |
| Carpenters            | 4         | 4         |           | 4         | 8         | 12        | 12        | 12        | 12        | 12        | 8         | 8         | 4         | 2         | 2         | 2         | 2         | 2         |           |           |
| Cement Finishers      | 2         | 2         |           |           |           | 4         | 8         | 12        | 12        | 8         | 4         | 4         |           |           |           |           |           |           |           |           |
| Electricians          |           |           |           | 2         | 4         | 6         | 6         | 4         | 4         | 8         | 12        | 12        | 12        | 12        | 8         | 6         | 4         | 4         | 2         | 2         |
| Insulation Workers    |           |           |           |           |           |           |           |           |           |           |           | 2         | 4         | 8         | 12        | 12        | 8         | 4         | 2         | 2         |
| Iron Workers          | 2         | 2         |           | 4         | 8         | 12        | 12        | 12        | 12        | 12        | 12        | 12        | 12        | 8         | 8         | 4         | 2         | 2         |           |           |
| Laborers              | 2         | 2         | 2         | 4         | 8         | 12        | 12        | 12        | 12        | 12        | 12        | 12        | 12        | 12        | 12        | 8         | 4         | 2         | 2         | 2         |
| Millwrights           |           |           |           | 2         | 4         | 4         | 2         | 2         | 4         | 8         | 8         | 4         | 4         |           |           |           |           |           |           |           |
| Operators             | 2         | 2         | 2         | 4         | 4         | 6         | 8         | 8         | 8         | 4         | 4         | 4         | 2         | 4         | 4         | 4         | 4         | 2         | 2         | 2         |
| Painters              |           |           |           |           |           |           |           |           |           |           |           |           |           |           | 2         | 8         | 12        | 12        | 8         | 4         |
| Pipefitters           |           |           |           | 4         | 8         | 8         | 4         | 4         | 8         | 8         | 12        | 12        | 12        | 8         | 8         | 8         | 4         | 2         | 2         | 2         |
| Lineman               |           | 8         | 8         | 2         |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| <b>Craft Subtotal</b> | <b>12</b> | <b>20</b> | <b>12</b> | <b>26</b> | <b>44</b> | <b>64</b> | <b>64</b> | <b>70</b> | <b>80</b> | <b>84</b> | <b>84</b> | <b>82</b> | <b>74</b> | <b>62</b> | <b>58</b> | <b>52</b> | <b>40</b> | <b>30</b> | <b>18</b> | <b>14</b> |
| Management            | 1         | 1         | 1         | 2         | 2         | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 2         | 2         |
| Engineering           | 1         | 1         | 1         | 4         | 4         | 6         | 6         | 6         | 6         | 8         | 8         | 8         | 8         | 8         | 6         | 6         | 4         | 4         | 2         | 2         |
| Document Control      | 1         | 1         | 1         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         |
| Commissioning         |           |           |           |           |           |           |           |           |           |           |           |           | 2         | 4         | 8         | 8         | 8         | 8         | 8         | 4         |
| <b>Staff Subtotal</b> | <b>3</b>  | <b>3</b>  | <b>3</b>  | <b>8</b>  | <b>8</b>  | <b>12</b> | <b>12</b> | <b>12</b> | <b>12</b> | <b>14</b> | <b>14</b> | <b>14</b> | <b>16</b> | <b>18</b> | <b>20</b> | <b>20</b> | <b>18</b> | <b>18</b> | <b>14</b> | <b>10</b> |
| <b>Project Total</b>  | <b>15</b> | <b>23</b> | <b>15</b> | <b>34</b> | <b>52</b> | <b>76</b> | <b>76</b> | <b>82</b> | <b>92</b> | <b>98</b> | <b>98</b> | <b>96</b> | <b>90</b> | <b>80</b> | <b>78</b> | <b>72</b> | <b>58</b> | <b>48</b> | <b>32</b> | <b>24</b> |

Source: IID 2006a

**SOCIOECONOMICS Table 5**  
**Available Labor by Skill in Imperial County Per Year**  
**And**  
**Maximum Needed by the El Centro Unit 3 Repower Project Per Month**

| Occupational Title                                  | 2001<br>Average<br>Annual<br>Employment | 2008<br>Average<br>Annual<br>Employment<br>(Estimated) | Maximum<br>Needed<br>Per Month<br>By El<br>Centro Unit<br>3 Repower<br>Project |
|---|---|--|--|
| Boilermakers  | N/AV*                                   | N/AV   | 12   |
| Carpenters  | 200                                     | 240  | 12   |
| Electricians  | 160                                     | 200  | 12   |
| Insulation Workers                                  | N/AV                                    | N/AV   | 12   |
| Iron Workers  | N/AV                                    | N/AV   | 12   |
| Laborers  | 400                                     | 510  | 12   |
| Millwrights   | N/AV                                    | N/AV   | 8  |
| Operators (Power Plant)                             | 80                                      | 90   | 8  |
| Painters (Includes<br>Construction and Maintenance) | 50                                      | 60   | 12   |
| Pipefitters (Includes plumbers<br>and steamfitters) | 170                                     | 200  | 12   |
| Management (Construction<br>Trades)                 | 110                                     | 140  | 4  |
| Engineering (Civil)                                 | 50                                      | 60   | 8  |
| Document Control                                    | N/AV                                    | N/AV   | 2  |
| Commissioning                                       | N/AV                                    | N/AV   | 8  |
| Cement Finishers                                    | N/AV                                    | N/AV   | 12   |
| Lineman   | N/AV                                    | N/AV   | 8  |

Source: EDD 2003 and IID 2006a.

\*Not Available (N/AV)

Staff accepts the applicant's position that Imperial County is the local labor market and most workers for construction and operation would be local. For the economic impact analysis, the applicant states 40 percent should be coming from Imperial County, 30 percent from San Diego County, and 30 percent from Riverside County, assuming union labor (IID 2006a). Staff finds this estimate reasonable and adequate.

### **Plant Operations Workforce**

According to the application, the El Centro Unit 3 Repower Project would use no additional full-time employees to operate the power plant which has an expected life of 30 years.

## IMPACTS

Following is the Environmental Checklist that identifies potential negative 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>SOCIOECONOMICS: POPULATION, HOUSING, AND ECONOMIC (FISCAL AND NON-FISCAL)-- Would the project:</b>   |                                       |   |                                     |                  |
| A. Have substantial non-fiscal effects on employment and economy?   |                                       |   |                                     | <b>X</b>         |
| 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)?   |                                       |   |                                     | <b>X</b>         |
| C. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?   |                                       |   |                                     | <b>X</b>         |
| D. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?   |                                       |   |                                     | <b>X</b>         |
| E. Have substantial fiscal effects on local government expenditures (excluding project costs), property and sales taxes?  |                                       |   |                                     | <b>X</b>         |
| F. Have a significant minority or below poverty level population within a six-mile radius that may be subject to disproportionate adverse effects of the project?   |                                       |   |                                     | <b>X</b>         |
| <b>Public Services</b> – 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?   |                                       |   |                                     | <b>X</b>         |
| H. schools?   |                                       |   |                                     | <b>X</b>         |
| I. medical and other public services and facilities?  |                                       |   |                                     | <b>X</b>         |

## DISCUSSION OF IMPACTS

### A. Non-Fiscal Effects on Employment and Economy: No Impact

The proposed El Centro Unit 3 Repower Project would require approximately 20 months for construction, average 73 workers on-site, and require a maximum of 98 workers during the tenth and eleventh (peak) months of construction. The applicant and staff agree that most if not all construction and operational workers are expected to reside in Imperial County, and, if necessary, additional workers can commute from surrounding counties and regions. Construction workers would commute within a two-hour one-way commute to the power plant site and this includes portions of Riverside and San Diego County. The El Centro Unit 3 Repower SPPE application

presented an impact scenario whereby 40 percent or 29 workers would come from Imperial County, 30 percent or 22 workers from San Diego County and 30 percent or 22 workers from Riverside County. Peak construction would make up 6.5 percent of construction jobs in Imperial County. (IID 2006a). This is a small number. Riverside and San Diego Counties have robust construction labor forces. Staff agrees with the applicant that workers outside of Imperial County would most likely commute since this is a short-term project. Thus, the project would not directly or indirectly cause significant negative socioeconomic impacts on local employment resources in the area.

#### **B. Induced Population Growth: No Impact**

For reasons listed above, staff does not expect any major in-migration of construction workers. For those that do in-migrate, it is unlikely their families would accompany them for this project. Because construction is short-term no substantial increase in population would occur. Operational plant employment is unlikely to induce any more than a very small population increase. Thus, the project would not directly or indirectly induce substantial population growth in the area.

#### **C. Displacement of Housing: No Impact**

Staff does not expect housing to be displaced because of the project. Sufficient vacant housing exists if any construction workers should seek temporary housing for the nine-month construction period. According to the 2005 US Census, total housing stock for Imperial County totaled 48,495. The vacancy rate was 9.9 percent. The City of El Centro had 13,029 total housing units with a vacancy rate of 6.69 percent (IID 2006a). The realty industry considers an average vacancy rate to be five percent. Also, there are 30 hotels/motels with over 700 rooms located in El Centro. A plausible scenario is that 350 rooms would be available at a 50 percent vacancy rate (IID 2006a). An average of only 40 workers would be on-site during construction. Construction workers and workers in the specialty trades are available within Imperial County. About 60 percent of construction workers or 44 construction workers are estimated by the applicant to commute from outside Imperial County. The applicant assumed that half of the workers share lodging (two workers per room); demand would exist during the construction phase for approximately 33 hotel rooms or recreational vehicles spaces (IID 2006a). Therefore, staff expects temporary lodging should be available from hotel/motel or rental units. Staff does not expect any construction workers to relocate to the area with their families.

The proposed El Centro Unit 3 Repower Project is not likely to significantly alter the location, distribution, density, or growth rate of the population of the community of El Centro, or Imperial County since construction impacts are of short duration and no new full-time employees would be hired to operate the facility.

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

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

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

The El Centro Unit 3 Repower Project, like the Niland Gas Turbine Project (NGTP), would be owned by the IID. IID is a local public agency, and as such is exempt from property taxes and school impact fees (Buckner 2006). Therefore, the project would not generate any property tax revenues for Imperial County. The sales tax is discussed under noteworthy public benefits.

#### **F. Minority or Below Poverty Level 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 El Centro Unit 3 Repower Project (please refer to **SOCIOECONOMICS Figure 1** in this Initial Study), and Census 2000 information that shows the below poverty level population is less than fifty percent within the same radius. The minority population is above the fifty percent environmental justice threshold, but because there is no significant negative socioeconomic impacts there are no environmental justice concerns.

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

Because there would be little or no in-migration of construction workers, staff does not expect significant impacts to police services. Furthermore, the El Centro Police Department (ECPD) is in El Centro with 49 sworn officers and 23 civilian employees. They are 3.5 miles from the project. The California Highway Patrol enforces state roads in Imperial County and has an Office in El Centro and Calexico (IID 2006a). Finally, the El Centro Unit 3 Repower is a small project that is not likely to provide much demand for police protection. Also, the ECPD has sufficient resources to provide law enforcement for the El Centro Unit 3 Repower Project.

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

There would be little or no in-migration of construction worker families and there are no new jobs related to plant operations. So staff does not expect significant impacts to schools. Also, the El Centro Unit 3 Repower Project would be owned by IID and is exempt from school impact fees (Buckner 2006). Therefore, the project would not be required to pay school impact fees normally assessed for commercial and industrial projects.

#### **I. Medical and Other Public Services: No Impact**

Because there is 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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Cumulative impacts can occur when more than one project has an overlapping construction schedule that creates a demand for workers that cannot be met by local labor, resulting in an influx on non-local labor and their dependents.

In addition to the El Centro Unit 3 Repower Project, two other power projects are forecast to be built in Imperial County during a similar time-frame:

- a. Salton Sea Unit 6 (SSU6) is six miles north of Calipatria (185 MW). As of June 12, 2006, the construction dates for this project are estimated to be February 1, 2007 to March 2009 or 26 months.
- b. The NGTP is another IID project that would be located in Niland, which is 30 miles north of El Centro. IID submitted an application for a Small Power Plant Exemption for this 96 MW power plant on March 13, 2006. It has a nine-month estimated construction schedule from September 2007 to May 2008 with commercial operations beginning in May 2008. From a socioeconomic view point, the NGTP project is generally similar to the El Centro Unit 3 Repower Project.

**SOCIOECONOMICS Table 6** shows cumulative construction workers estimated for SSU6 and NGTP. The El Centro Unit 3 Repowering Project is another small power plant, and together, the three power plants overlap for nine months. They would not have a significant socioeconomic impact due to the robust non-local labor markets of Riverside and San Diego Counties from which construction labor can commute to the respective projects. Also, the local construction labor force in Imperial County would supply a good deal of the required manpower.

**SOCIOECONOMICS Table 6  
Cumulative Construction Workers (Estimated)**

|                         | Salton Sea<br>Unit 6* | NGTP** | El Centro Unit 3<br>Repowering*** | Total |
|-------------------------|-----------------------|--------|-----------------------------------|-------|
| <b><u>Year 2007</u></b> |                       |        |                                   |       |
| Jan                     |                       |        |                                   |       |
| Feb                     | 31                    |        |                                   | 31    |
| Mar                     | 46                    |        |                                   | 46    |
| Apr                     | 51                    |        |                                   | 51    |
| May                     | 63                    |        |                                   | 63    |
| Jun                     | 71                    |        |                                   | 71    |
| Jul                     | 121                   |        |                                   | 121   |
| Aug                     | 129                   |        |                                   | 129   |
| Sep                     | 176                   | 20     | 15                                | 211   |
| Oct                     | 300                   | 30     | 23                                | 353   |
| Nov                     | 359                   | 44     | 15                                | 418   |
| Dec                     | 409                   | 54     | 34                                | 497   |

|                         | Salton Sea<br>Unit 6* | NGTP** | El Centro Unit 3<br>Repowering*** | Total |
|-------------------------|-----------------------|--------|-----------------------------------|-------|
| <b><u>Year 2008</u></b> |                       |        |                                   |       |
| Jan                     | 407                   | 60     | 52                                | 519   |
| Feb                     | 363                   | 54     | 76                                | 493   |
| Mar                     | 406                   | 44     | 76                                | 526   |
| April                   | 419                   | 30     | 82                                | 531   |
| May                     | 462                   | 24     | 92                                | 578   |
| Jun                     | 459                   |        | 98                                | 557   |
| Jul                     | 463                   |        | 98                                | 561   |
| Aug                     | 467                   |        | 96                                | 563   |
| Sep                     | 463                   |        | 90                                | 553   |
| Oct                     | 422                   |        | 80                                | 502   |
| Nov                     | 325                   |        | 78                                | 403   |
| Dec                     | 277                   |        | 72                                | 349   |
| <b><u>Year 2009</u></b> |                       |        |                                   |       |
| Jan                     | 130                   |        | 58                                | 188   |
| Feb                     | 71                    |        | 48                                | 119   |
| Mar                     | 7                     |        | 32                                | 39    |
| April                   |                       |        | 24                                | 24    |

\* Includes geothermal power plant (including wells and pipelines) and transmission construction. The estimated construction workforce is based on the 2002 26-month construction estimate from the SSU6 AFC (SSU6 2002).

\*\* Niland AFC. 2006a

\*\*\* IID 2006a.

Finally, the El Centro Unit 3 Repower is a relatively small power plant project with no direct or indirect significant negative socioeconomic impacts. In addition, due to the relatively large labor force available, the relatively few construction workers needed for the El Centro Unit 3 Repower Project and other projects under construction, staff concludes that the El Centro Unit 3 Repower would not contribute to a significant adverse cumulative socioeconomic impact.

## **NOTEWORTHY PUBLIC BENEFITS**

Income and employment multiplier analysis using the Impact Analysis For Planning (IMPLAN) model, an input-output model used by the applicant and acceptable to staff, found that secondary (indirect and induced) impacts (secondary gross benefits) of construction are expected to result in 58 additional jobs and \$1.7 million in labor income. Secondary impacts for operations would be 1.5 additional jobs and \$40,000 in labor income.

The applicant estimates the El Centro Unit 3 Repower Project total construction costs to be approximately \$73.5 million, the construction payroll is \$18.4 million and the value of construction costs purchased is estimated at about \$55.1 million. Annual operation costs within Imperial County would be about \$700,000 excluding fuel costs. Total sales taxes during construction are estimated at \$5.4 million.

In summary, important fiscal and non-fiscal public benefits are: capital costs, secondary employment and income impacts, construction payroll, sales taxes, and the value of locally purchased construction and operation equipment and materials. All direct and secondary economic estimates are in 2006 dollars (IID 2006a).

## **CONCLUSIONS**

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The El Centro Unit 3 Repower Project is a relatively small power plant and staff concludes there would not be any direct, indirect, or cumulative significant adverse socioeconomic impacts. However, there would be positive socioeconomic benefits such as construction and operation payroll, sales tax, and secondary employment and income impacts.

The following **SOCIOECONOMICS Table 7** provides a summary of socioeconomic data and information from this analysis with emphasis on economic benefits of the El Centro Unit 3 Repower Project.

## **PROPOSED CONDITIONS OF EXEMPTION**

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None proposed.

**SOCIOECONOMICS TABLE 7<sup>1</sup>**  
**Data and Information**

|  |  |
|--|--|
| <b>Total Construction Costs</b>                            | \$73.5 million   |
| <b>Estimate of Purchased Costs</b>                         |  |
| Construction   | About \$55.1 million   |
| Operation  | \$700,000 (excluding fuel costs) within Imperial County  |
| Estimated Annual Property Taxes                            | None. Exempt since the project owner, IID, is a local public agency.   |
| Estimated School Impact Fees                               | None. Exempt since the project owner, IID, is a local public agency.   |
| <b>Direct Employment</b>                                   |  |
| Construction (Average)                                     | 73 jobs  |
| Operation  | No new jobs  |
| <b>Secondary Employment</b> (indirect and induced impacts) |  |
| Construction   | Estimated to be 58 workers. <sup>2</sup>   |
| Operation  | 1.5  |
| <b>Secondary Income</b> (indirect and induced impacts)     |  |
| Construction   | \$1.7 million in labor income  |
| Operation  | \$40,000 in labor income   |
| <b>Payroll</b>   |  |
| Construction   | Total: \$18.4 million  |
| Operation  | N/A  |
| <b>Estimated Sales Taxes</b>                               |  |
| Construction   | Total: \$5.4 million   |
| Operation  | N/A  |
| Existing/Projected Unemployment Rates                      | Existing – 13.1 percent in December 2005, (not seasonally adjusted for Imperial County). (Preliminary estimate.)<br>Projected - N/AV |
| Percent Minority Population (six-mile radius)              | 78.80 percent  |
| Percent Poverty Population (six-mile radius)               | 20.48 percent  |

<sup>1</sup> Table 2 uses 2006 dollars (IID 2006a) and construction is for 20 months. The estimated minimum economic life of the El Centro Unit 3 Repower Project is 30 years. The economic impact assessment (secondary impacts) was for Imperial County. Population data/information is for a six-mile radius from the power plant.

<sup>2</sup> Staff estimated the construction employment multiplier to be 1.79. Staff finds this acceptable since multipliers of 1.2 to 2.5 are what many economists find acceptable in the long run (Moss et al. 1994).

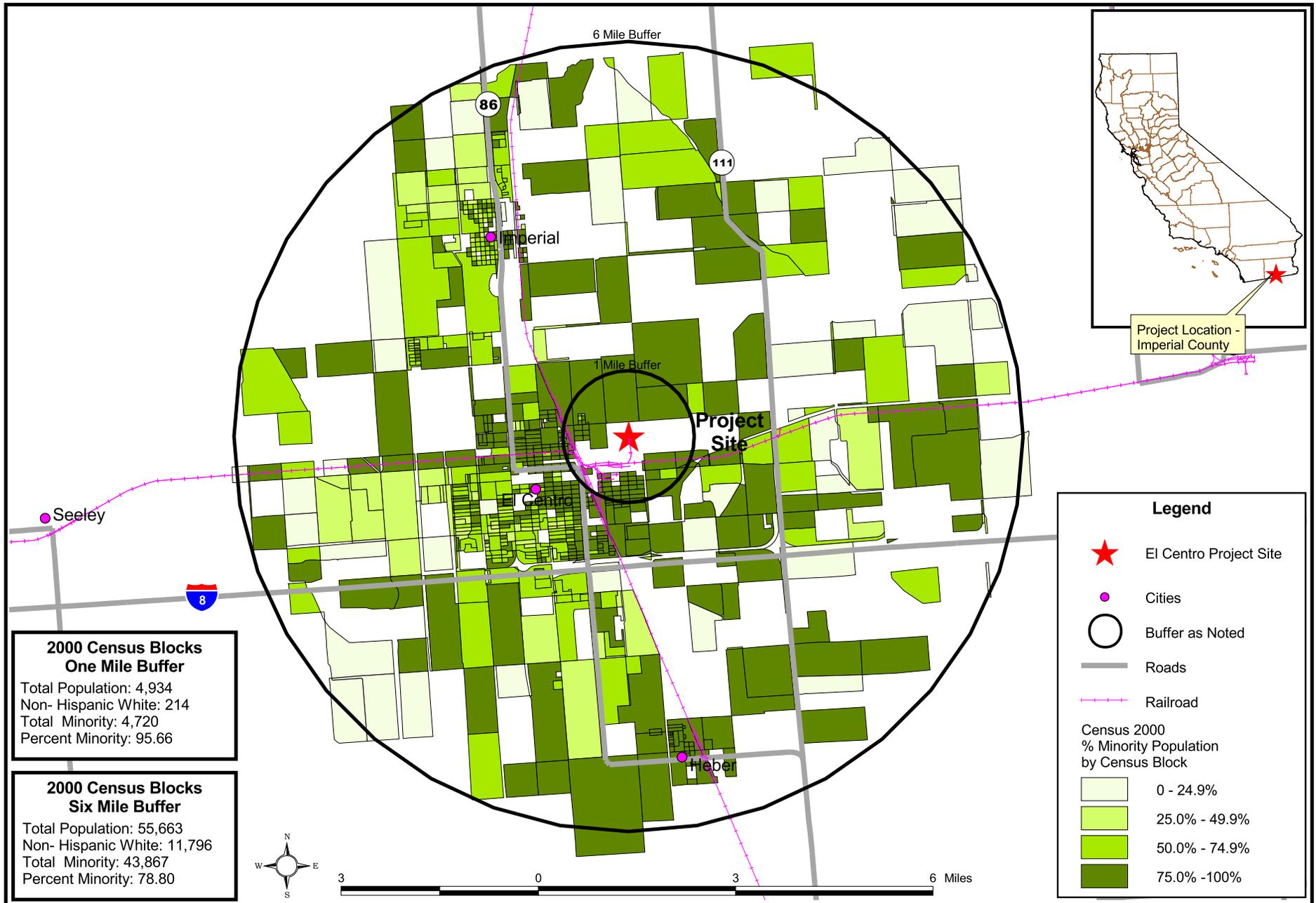
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**SOCIOECONOMICS - FIGURE 1**

SPPE - El Centro Unit 3 Repower - Census 2000 Minority Population by Census Block - One and Six Mile Buffer



CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, SEPTEMBER 2006

SOURCE: California Energy Commission Statewide Transmission & Power Plant Maps 2006, Census 2000 PL 94-171 Data - Matrix PL2

# SOIL AND WATER RESOURCES

Linda D. Bond

## INTRODUCTION

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The purpose of this section is to determine if the El Centro Unit 3 Repower Project poses any unmitigated significant adverse impacts to soil or water resources, as proposed, and to recommend any additional mitigation, if needed, to reduce all potential adverse impacts to less than significant. Energy Commission Staff's (staff) impact assessment is based on questions provided in the California Environmental Quality Act (CEQA) Environmental Checklist (CEQA 2004) for Soils, Hydrology and Water Quality, as well as questions regarding Utilities and Service Systems, and has applied the thresholds for determining significance that are identified in this document. Laws, ordinances, regulations and standards (LORS) that apply to CEQA issues are cited below.

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

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Staff has applied the following LORS to define the threshold of significance for potential adverse impacts to soil and water resources under CEQA.

### 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. 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 (SWRCB) 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 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.

## **Uniform Building Code**

The California Building Standards Code published at Title 24 of the California Code of Regulations section 3 et seq. is comprised of eleven parts containing the building design and construction requirements relating to structural safety. Local planning, building and safety departments enforce the California Uniform Building Code. The California Uniform Building Code establishes the testing methods for identifying expansive soils (ASTM D48-29) and mandates design criteria for construction.

## **LOCAL**

### **Imperial County**

#### **Flood Damage Regulations**

Imperial County Land Use Code, Division 16, Flood Damage Protection, specifies the requirements for development within a floodplain.

### **City of El Centro**

The City of El Centro is the permitting agency for construction. The city municipal codes specify the building, construction and grading standards for industrial sites. The city Building Department issues permits, reviews and approves construction plans, conducts field inspections and ensures compliance with applicable city and state regulations for building activities. City building and grading permits would be required for the proposed project.

## **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 (TDS), 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 SWRCB.

## **SETTING**

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The proposed El Centro Unit 3 Repower Project would be located at the existing El Centro Generating Station (ECGS), owned by Imperial Irrigation District (IID or applicant), in the City of El Centro in the Imperial Valley. The Imperial Valley is one of the primary agricultural regions of California, possessing productive soils, a desert climate and access to water from the Colorado River. The Colorado River is the region's only significant source of fresh water.

## **REGIONAL GEOLOGY AND HYDROLOGY**

The Imperial Valley is located adjacent to the California-Mexico border, in the south central portion of the Salton Basin. The physiography and geologic formation of the Salton Basin largely defines the soil and water conditions of the region. The Salton Basin, a topographic and structural depression, is the northern extension of the Gulf of California. A tectonic rift in the continental plate formed the Gulf, resulting from movement along a fault system that is still active today beneath both the Gulf and the basin. However, over time, the northern portion of the gulf became land bound by the growth of the Colorado River's delta fan. The Colorado River terminates south of Imperial Valley at the Gulf of California and has deposited vast quantities of sediments, which isolated the Salton Basin. It has become a closed basin with no outlet for surface water discharge. The central portion of the valley is now filled with sediment and the depth to bedrock is approximately 15,000 feet. The Colorado River first deposited sediments under marine conditions, followed by deltaic conditions. Most recently, the interior of the basin has become a flood plain of the Colorado River, containing river deposits, lake deposits and, finally, alluvial deposits, which have contributed to the basin fill. Over time, sedimentation from the Colorado River has generally kept pace with tectonism. However, without the presence of the Colorado River delta, the Imperial Valley would be inundated by the sea because much of the valley still remains below sea level. The elevation of the Salton Sea, which represents the low point of the valley, is 227 feet below sea level.

## CLIMATE

The climate of the City of El Centro and the Imperial Valley is characterized by extreme aridity and high summer temperatures. Maximum summer temperatures average 106 degrees Fahrenheit (June-August), and minimum winter temperatures average 41 degrees (December-February) in El Centro, according to the Western Regional Climate Center (WRCC). The region has the driest climate in California. Precipitation for the El Centro area averages 2.61 inches per year. Rain falls in the winter through early spring and in late summer thunderstorms. The highest rainfall on record for El Centro for a single day was 2.31 inches on October 9, 1976. (WRCC 2006) Evapotranspiration, or loss of water to the atmosphere, significantly exceeds precipitation. The reference crop evapotranspiration (ET<sub>o</sub>), which is the standard measure of evapotranspiration, averages 72 inches per year for the El Centro area (CIMIS 2006).

## SOILS

The proposed project site is underlain by a thick sequence of lake-bed deposits associated with the ancient Lake Cahuilla, which extended across the floor of the Imperial Valley. Sediments are predominantly clay, silt and sand. Finer, clay-rich sediments predominate in the central portion of the lake, and sandy sediments predominate along the ancient shoreline and towards the Colorado River Delta to the south. The proposed project is located in the central portion of these lake bed deposits, so soils are generally fine-grained and clayey.

The soils at the proposed project site have been classified and described by the federal Natural Resources Conservation Service (NRCS). The NRCS identifies the Imperial-Glenbar Silty Clay Loams as the predominant soil at the project site and underlies the proposed location for the project's combustion turbine generator/heat recovery steam generator (CTG/HRSG) power block. Holtville Silty Clay soils are also present at the proposed location of the temporary construction area, and Meloland-Holtville Loams cover a portion of the electrical interconnection line area. The soils at the proposed site have similar properties with some variation in the vertical distribution of clay and soil expansion ratings.

The Imperial Soil Series are composed of calcareous, silty clay loams to depths of 60 inches and are alluvial in origin. The clay component of these soils increases with depth at the site. The clay component increases from 30 to 40 percent in the surface layer to 35 to 60 percent below a depth of 12 inches. Imperial soils are moderately susceptible to water erosion ( $K_w$  and  $K_f=0.32$ ). Water erosion factors range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. Imperial soils are also moderately susceptible to wind erosion, with a rating of 4. (Wind erosion ratings range from 1 to 8. Soils most susceptible to erosion are rated 1 and least susceptible soils are rated 8. Beneath a depth of 12 inches, Imperial soils have the highest negative soil expansion rating (1) with a linear extensibility potential (shrink-swell) of 6.0 to 8.9, indicating the least favorable soil expansion conditions for construction. The low permeability of Imperial soils can support shallow perched groundwater conditions at a depth of 2.5 to 6 feet if irrigated. Slow percolation of the Imperial soils at depths below 12 inches severely limits the soil's suitability for septic tank installation.

The Glenbar Soil Series are composed of calcareous, fine-silty clay loams. These soils are typically very deep, forming in stratified stream alluvium on flood plains and alluvial fans. The Glenbar soils have a lower clay content than the Imperial soils, ranging from 27 to 35 percent. Glenbar soils are moderately susceptible to water erosion ( $K_w=0.24$  to  $0.37$  and  $K_f=0.24$  to  $0.37$ ). Glenbar soils are also moderately susceptible to wind erosion, with a rating of 4L. (A rating of 4L indicates a calcareous soil.) These soils have a moderate soil expansion rating of 0.5 with a shrink-swell potential of 3 to 6. Glenbar soils can support shallow perched groundwater conditions at a depth of 2.5 to 6 feet if irrigated and slow percolation capacity severely limits the soil's suitability for septic tank installation.

The Holtville Soil Series consists of very deep, well drained loams. These soils are mixed and stratified, forming on alluvium in flood plains and basins. Typically, these soils include an upper clayey layer with a clay content that ranges from 40 to 60 percent. Holtville soils have a low to moderate susceptibility to water erosion ( $K_w=0.15$  to  $0.43$  and  $K_f=0.15$  to  $0.43$ ). These soils are moderately susceptible to wind erosion, with a rating of 4. The clay layer of the Holtville soils has a high soil expansion rating of 1 with a shrink-swell potential of 6.0 to 8.9. Holtville soils can support shallow perched groundwater conditions at a depth of 2.5 to 6 feet if irrigated and slow percolation capacity severely limits the soil's suitability for septic tank installation.

The Meloland Soil Series are deep, calcareous, stratified soils, composed of very fine sandy loam overlying a silty clay. From a depth of 26 to 38 inches, clay content ranges from 35 to 55 percent. Above and below this layer, clay content is less than 18 percent. Meloland soils are moderately susceptible to water erosion ( $K_w=0.24$  to  $0.32$  and  $K_f=0.24$  to  $0.32$ ). Meloland soils are also moderately susceptible to wind erosion, with a rating of 4L. These soils have no limitations with respect to soil expansion. Slow percolation capacity severely limits the soil's suitability for septic tank installation.

## **SURFACE WATER**

The project area is located approximately 25 miles southeast of the Salton Sea and 85 miles north of the Gulf of California. Surface water features in the vicinity of the proposed project are limited to the Alamo River, the New River, agricultural irrigation delivery canals and return flow canals. The Alamo River, which is located about 6 miles east of the project site, and the New River, which is located about 10 miles west of the project site, originate in Mexico and drain to the Salton Sea. Both rivers receive irrigation return flows, treated municipal wastewater and industrial wastewater from the Imperial Valley. Both carry significant loads of silt, nutrients and pesticides. New River also contains high concentrations of pathogens from untreated sewage and industrial wastes from discharges in Mexico. (RWQCB2006) There are no streams or canals located within the project site or the construction area. However, there are several shallow, lined reservoirs, which hold operation water for the ECGS, located adjacent to the site of the proposed CTG/HRSG power block (CEC/LDBOND2006b).

Other than scant rainfall, the only source of fresh water to the region for both irrigation and domestic use is water diverted from the Colorado River. The closest source of fresh water to the project site is IID's Dogwood Canal, which supplies raw water for the

existing ECGS. IID has senior water rights to 3.1 million acre-feet of Colorado River water per year.

The proposed project site is located within the alluvial flood plain of the Colorado River at an elevation of about 45 feet below sea level. However, according to Federal Emergency Management Agency (FEMA), the 100-year flood hazard zone is currently restricted to land adjacent to the Alamo and New Rivers. The proposed project site and its linear features are located outside the 100-year flood hazard zone.

## **GROUNDWATER**

The Imperial Valley Groundwater Basin is bounded on the east by the Sand Hills and on the west by the Fish Creek and Coyote Mountains. In terms of groundwater management, the basin extends to the international border with Mexico. However, the aquifer system physically extends south beneath the Mexicali Valley and the Colorado River Delta to the Gulf of California. The basin extends north to the Salton Sea, which, at an elevation of 227 feet below sea level, is the discharge point for groundwater, rather than the Gulf.

The Basin has two major aquifers separated by a semi-permeable aquitard. (An aquitard is a low-permeability layer that can store groundwater and also transmit water slowly from one aquifer to another.) The upper aquifer ranges from 200 to 450 feet thick, and the deeper aquifer ranges in thickness from 380 to 1,500 feet thick. The aquifers are composed of recent, coarse-grained alluvial deposits. The aquitard that separates the aquifers ranges in thickness from 60 to 200 feet thick. In the central portion of the valley, the aquifer system is confined by overlying, fine-grained lake deposits.

Groundwater in the Basin generally flows towards the axis of the valley and then north to the Salton Sea. Groundwater is hydraulically connected to the Salton Sea. However, depth to groundwater varies across the basin. Groundwater tends to mound beneath canals and rivers and, in areas with low-permeability soils, irrigation can cause perched groundwater conditions as shallow as 2 to 5 feet below land surface.

The water quality of the Imperial Valley aquifers is generally poor with reported TDS concentrations ranging from 498 to 7,280 mg/L (Loeltz1975). The California Department of Water Resources (CDWR) reports that groundwater in the valley is unusable for irrigation or domestic purposes without treatment. Although the aquifers were formed under freshwater conditions, deposited by flood flows of the Colorado River and stormwater flows, both the underlying sediments and recharge from the valley have degraded the original quality of the water contained in these aquifers. The deeper sediments in the valley were originally deposited under marine conditions before the Colorado River Delta isolated the valley from the gulf. Therefore, the deeper sediments contain saline water. In addition, recent recharge to the aquifer system has been primarily from percolation from irrigated land. Irrigation concentrates the salts contained in Colorado River water through the evapotranspiration process. When plants consume water, salts are left behind in the portion of the water that seeps below the root zone into the underlying aquifers. Other sources of recharge include seepage from unlined delivery and drainage canals, from the Alamo and New Rivers, from deep percolation of

rainfall and runoff, and underflow into the basin. Except for percolation from precipitation and seepage from delivery canals, recharge in the Imperial Valley consists of poor quality water. Therefore, because the Imperial Valley is a closed basin with no outlet for saline water to discharge, salts will continue to accumulate in the basin and groundwater quality will continue to decline with time. (CDWR2003)

Groundwater was encountered at the proposed project site at a depth of 4 to 6 feet below land surface in geotechnical borings conducted for the applicant by URS. There are no production, monitoring or injection wells located at the proposed site to provide additional information on the subsurface conditions. (IID2006a) High water levels either represent the local level of the water table or perched water supported by shallow clays. Irrigation activities in the vicinity of the proposed project likely support the high water table during most of the year. The land adjacent to the eastern project site boundary is currently irrigated, and, north of the project, land was recently also under irrigated cultivation. During the rainy winter months, groundwater levels apparently rise and ground surface is frequently saturated for extended periods of time. (CEC/LDBOND2006b)

## PROJECT DESCRIPTION

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All construction for the proposed project will occur within a previously-disturbed portion of the existing ECGS, which is located on a 150-acre property owned by IID. Construction of the proposed project will disturb about 12.5 acres of land, including linear facilities (**Soil and Water Resources Table 1**). The new CTG/HRSG power block will occupy 2.8 acres. Excavation for foundations and flatwork will be performed for the construction of the power block. However, to maintain the existing drainage system around the power block, no grading will be performed. The construction of linear facilities, consisting of fuel gas supply lines and electrical interconnection line, will disturb 1.2 acres. An additional 8.5 acres will be graded and temporarily used for construction laydown, parking and job trailers.

**SOIL AND WATER RESOURCES Table 1  
Estimated Land Disturbance**

| <b>Permanent Installations</b>           | <b>Acres</b> |
|--|--------------|
| CTG/HRSG Power Block                     | 2.8          |
| Fuel Gas Supply Lines                    | 0.2          |
| Electrical Interconnection Line          | 1.0          |
| <b>Temporary Construction Components</b> |              |
| Laydown, Parking and Job Trailers        | 8.5          |
| <b>Total</b>                             | <b>12.5</b>  |

The applicant proposes to submit a Notice of Intent (NOI) to comply with the NPDES General Permit for Storm Water Discharges Associated with Construction Activities (IID2006a). A Storm Water Pollution Prevention Plan (SWPPP) for construction will be developed and implemented in accordance with this permit. The SWPPP will incorporate all applicable Best Management Practices (BMPs) to minimize erosion and

siltation associated with construction. At the conclusion of construction, all temporary construction areas will be restored to pre-construction conditions and a Notice of Termination will be filed to terminate coverage under the General Permit. The project will also comply with the City of El Centro grading, building, and construction requirements. The applicant includes the development and implementation of the SWPPP and compliance with city grading and dust suppression requirements in four proposed mitigations (Soil 1 through Soil 4) that address the protection of soil resources during construction. In addition, the existing ECGS SWPPP for Industrial Activities will be updated to reflect the proposed project under the existing NPDES Permit for Industrial Activities.

## **WATER SUPPLY AND USE**

The applicant has proposed no change in the amount of water use and no change to the existing raw water supply source for the operation of Unit 3. Raw water is currently treated by a demineralization system to provide high quality make-up water for steam cycles. No modification to the water supply, water delivery system or water treatment system has been proposed. The project will also continue to use most of the existing facilities, including the condensate systems, feed water systems (including the feed water pumps), cooling water systems, circulating water pumps and cooling tower, and make-up water systems. Only the existing Unit 3 condenser will be replaced with minor modifications to the evaporative cooling towers.

The applicant reports that the construction of the Unit 3 Repower Project will significantly increase water use efficiency of Unit 3 with respect to power production. Based on average ambient conditions, the Unit 3 Repower Project will use approximately 7,400 gallons/megawatt for a 24-hour operating day in contrast to the existing use of over 18,500 gallons/megawatt for the same operating period. Given these anticipated conditions, the applicant has offered to cap water usage at 1,029 acre-feet/year, the average annual rate of the existing Unit 3 system. There will be no increase in potable water use because there will be no change in the number staff required to operate the project. The only other use of water cited in the project application is the potential use of raw water for dust suppression during construction. No estimate of the amount of water required for construction was provided.

The applicant proposes to continue to use Colorado River water from IID's Dogwood surface canal, which serves the entire ECGS plant, including Unit 3. IID has an ample source supply because the district has senior water rights to 3.1 million acre-feet of Colorado River water per year. The applicant reports that the existing water delivery system and demineralization system has sufficient capacity to meet the anticipated requirements of the proposed project. If continued use of the existing water supply is approved, no off-site linears or new interconnections would be required.

The applicant evaluated four potential water supply alternatives available to the project, groundwater, irrigation return flows, municipal wastewater and potable water (IID2006a). Overall, the development of any of these alternatives water supplies would require significant capital outlays for the development and construction of delivery systems. The concentration of total dissolved solids in groundwater, irrigation return flows and municipal wastewater would also require additional water quality treatment

prior to use that would require the construction of new water treatment facilities. The applicant considers the construction of new water delivery and treatment systems cost prohibitive. In addition, the applicant reports that use of irrigation return flows or municipal waste water for the project would conflict with proposed use by the Salton Sea Ecosystem Restoration Program (Program), under development by CDWR and the California Department of Fish and Game (CDFG). The applicant also reports that industrial use is currently not a designated use for the municipal wastewater available in the City of El Centro. Finally, the applicant states that the potable water does not represent an alternative to irrigation water because both potable water and irrigation water are derived from the same source, the Colorado River. The applicant has concluded that all of the alternatives were economically and environmentally infeasible. The applicant did not consider the use of dry cooling.

## **WASTEWATER**

Waste streams for power plants typically include process wastewater, sanitary wastes, stormwater and water associated with construction activities.

Process wastewater for the proposed project will include cooling tower blow-down, evaporative cooler blow-down, water treatment rejects, CTG condensate, drains and contact stormwater from containment areas (IID2006a). Annual wastewater discharge is estimated to be about 283 acre-feet.

All of the wastewater currently generated by the ECGS is handled under an existing NPDES permit (CEC/LDBOND2006b). Wastewater disposal for the proposed project would be covered under the existing NPDES, which will be modified to include the repowered Unit 3. However, IID is in the process of constructing two Class I non-hazardous wastewater deep injection wells that will eventually be used for the disposal of all ECGS wastewater, including the proposed project.

These wells are being constructed by IID as a separate project to comply with its existing 2004 NPDES permit for the entire ECGS. Under the 2004 NPDES permit, the ECGS is required by the RWQCB to meet discharge limitations for toxics under the California Toxics Rule (CTR). IID selected the use of deep wastewater injection wells to meet the CTR requirements. These wells will be constructed regardless of whether or not the El Centro Unit 3 Repower Project is approved. Since the new deep wastewater injection wells are needed for the entire ECGS Site, the permitting is independent of the proposed project addressed in this Small Power Plant Exemption (SPPE) Application. Because the wells are not being built or expanded for this proposed project and are being developed under a separate permitting process, the wells are not being evaluated as part of the El Centro Unit 3 Repower Project.

IID's wastewater injection wells must be operational by July 1, 2008 and in compliance with CTR by July 1, 2009. The target date for commercial operation of the proposed project is no later than May 2009. Given the operation deadline for the injection wells, IID anticipates that the wells will be in operation and available to receive wastewater from the project by the start date of commercial operation. The applicant reports that the development of the injection wells are on schedule and met its first NPDES Permit Milestone on July 1, 2006 (CEC/LDBOND2006b).

Specific provisions for the management of spills and contaminated stormwater from chemical storage areas and other hazardous areas on site are addressed in the Hazardous Waste section of the Draft Initial Study.

The applicant proposes that project personnel would use the existing ECGS facilities for sanitary wastewater disposal. The existing facilities discharge wastes to a septic system located within the 150-acre IID/ECGS property. No additional personnel will be required for the operation of the proposed project. The construction workforce will average 73 workers over a 20-month period.

Prior to construction, the project will submit a NOI to comply with the NPDES for Construction Activities. Accordingly, the project will develop and implement a SWPPP for the construction of the proposed project. The SWPPP will identify and assess the potential sources of pollutants, will specify drainage control measures and will include other the appropriate BMPs to reduce or prevent erosion, siltation, and pollutants in stormwater discharges. The applicant specifically includes the development and implementation of the SWPPP in three proposed mitigations (IID2006a, Soil 1, Soil 2 and Soil 4) that address the protection of water, as well as soil, resources.

Dewatering during construction may be necessary. Groundwater was encountered at a depth of 4 to 6 feet below land surface during the on-site geotechnical investigation. The geotechnical report recommends excavation to a depth of 4 feet for the equipment pad and building areas to mitigate for moderately expansive and compressible soils. However, if dewatering is necessary, the project will comply with the permit requirements of the NPDES General Order for Dewatering and Low Threat Discharges to Surface Waters. The project will have obtained this permit prior to the start of construction because construction will require the discharge of water during pipe testing, which is covered under this same permit.

The discharge of stormwater from the entire ECGS is permitted under an existing NPDES General Industrial Stormwater Permit. The existing ECGS SWPPP will be updated to reflect the addition of the proposed project. However, no changes to the existing stormwater system have been proposed or are anticipated for the El Centro Unit 3 Repower Project.

Given the flat topography of the site and the scant rainfall, stormwater runoff at the existing ECGS is minimal (IID2006a). The proposed project area is located in the existing ECGS Drainage Area D, one of five drainage areas within the existing ECGS site. Grading at the project site will be designed to direct non-polluted stormwater to the existing drainage point for Drainage Area D. The area drains discharge to the Central Drain No. 5. The Central Drain discharges to the Alamo River and ultimately to the Salton Sea. Existing control gates allow project personnel to inspect and test stormwater prior to discharge to the Central Drain. If the stormwater is contaminated, it is pumped by vacuum truck and disposed of properly off-site.

The increase in impervious area caused by the proposed project will be limited to the 2.8-acre area in which the new CTG/HRSG power block will be constructed. Therefore, the increase in storm runoff should be minimal. However, the applicant reports that extensive gullies and channels are present across the project site and states that the

project site would be subject to surface water flow during periods of intense rainfall (IID2006a). To maintain the existing stormwater drainage paths and to avoid stormwater contact with equipment, the power block will be elevated about one foot above the grade (CEC/LDBOND2006b).

## IMPACTS

The Environmental Checklist below identifies impacts in the Soil and Water Resources issue area that could potentially result from the project. An analysis of each impact and an explanation of the impact conclusion follow the checklist.

| <b>SOIL AND WATER RESOURCES ENVIRONMENTAL CHECKLIST</b>   | Potentially Significant Impact | Less than Significant With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-----------|
| Would the project:  |                                |  |                              |           |
| A. Result in substantial soil erosion or the loss of topsoil?   |                                | <b>X</b>   |                              |           |
| B. 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>  |
| C. Violate any water quality standards or waste discharge requirements?   |                                |  |                              | <b>X</b>  |
| D. 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>  |
| E. 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>   |                              |           |
| F. 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>                     |           |
| G. 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>   |                              |           |
| H. Otherwise substantially degrade water quality?   |                                | <b>X</b>   |                              |           |
| I. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard  |                                |  |                              | <b>X</b>  |

| <b>SOIL AND WATER RESOURCES ENVIRONMENTAL CHECKLIST</b>   | Potentially Significant Impact | Less than Significant With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-----------|
| Would the project:  |                                |  |                              |           |
| Boundary or Flood Insurance Rate Map or other flood hazard delineation map?   |                                |  |                              |           |
| J. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?   |                                |  |                              | <b>X</b>  |
| K. 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>                     |           |
| L. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?   |                                | <b>X</b>   |                              |           |
| M. 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>  |
| N. 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>  |
| O. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?  |                                |  |                              | <b>X</b>  |
| P. 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>  |
| Q. 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. Soil Erosion or the Loss of Topsoil: Less than Significant with Mitigation Incorporated**

The potential for soil erosion typically increases during the construction of new developments. Accelerated wind and water induced erosion may result from earth moving activities associated with construction of the proposed project. The removal of vegetative cover and subsurface root systems and the alteration of the soil structure leave soil particles vulnerable to detachment and removal by wind or water. Construction and maintenance-related erosion is of particular concern in areas of sandy soils. Rainfall can greatly enhance the potential for water erosion. Grading activities may redirect runoff into areas more vulnerable to erosion. Areas where

linear facilities cross drainages are also vulnerable to erosion. Once constructed, the increase in the amount of impervious surfaces may increase the amount of runoff and peak discharges from the project site.

Four soil series have been identified by the NRCS at the proposed project site, the Imperial, Glenbar, Holtville and Meloland Series (NRCS2006). All of the soils at the project site are moderately susceptible to water and wind erosion, with the exception of the Holtville Series which has a low to moderate susceptibility to water erosion (Table 2).

**SOIL AND WATER RESOURCES Table 2  
Soil Susceptibility to Erosion**

| <b>Soil Series</b> | <b>Susceptibility to Water Erosion</b> | <b>Susceptibility to Wind Erosion</b> |
|--------------------|--|---------------------------------------|
| <b>Imperial</b>    | Moderate                               | moderate                              |
| <b>Glenbar</b>     | Moderate                               | moderate                              |
| <b>Holtville</b>   | low to moderate                        | moderate                              |
| <b>Meloland</b>    | Moderate                               | moderate                              |

Gullies and channels are present across the project site, and the project site would be subject to surface water flow during periods of intense rainfall (IID2006a). The applicant has proposed four mitigations (IID2006a, Soil 1-4), including the development and implementation of a site-specific SWPPP, to minimize erosion and siltation associated with construction. When construction is complete, the power block will be elevated above the existing grade to maintain the existing stormwater drainage paths. Finally, all temporary construction areas will be restored to pre-construction conditions when construction is completed. In addition, the existing ECGS SWPPP for Industrial Activities will be updated to reflect the permanent changes caused by the proposed project. However, minimal changes in existing stormwater runoff and no changes to existing stormwater drainage system are proposed or anticipated.

Without mitigation, the project would potentially cause substantial soil erosion or the loss of topsoil during construction. Staff concludes that the project's potential to cause substantial soil erosion or the loss of topsoil would be less than significant with incorporation of IID's mitigation measures.

**B. Soils incapable of supporting septic tanks: No Impact**

Slow percolation capacity severely limits the soil suitability for septic tank installation within the 12.5-acre area of the proposed project. However, the applicant does not propose to construct a septic system within the proposed project site area. Instead, the project would use the existing ECGS septic system for sanitary wastewater disposal.

No additional personnel will be required for the operation of the proposed project. Therefore, there will be no change in the volume of sanitary waste for the proposed project, except during the construction period. The construction workforce will average 73 workers over a 20-month period. It is assumed that construction sanitary wastes will be transported off-site for disposal.

Staff concludes that the project's proposed use of the existing ECGS facilities would cause no impact.

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

The project, as proposed will manage and discharge process wastewater, sanitary wastewater, stormwater and other non-polluted stormwater in compliance with applicable LORS related to water quality and wastewater discharge.

Process wastewater for the proposed project would be discharged in compliance with the existing ECGS NPDES, which will be modified to include the repowered Unit 3 (CEC/LDBOND2006b).

The pre-existing ECGS septic system, which the applicant proposes to use for sanitary wastewater disposal, is presumed to be operating in compliance with all existing permits. During the construction period it is assumed sanitary wastes will be trucked off-site to an approved wastewater treatment facility.

To address stormwater management and other non-polluted wastewater disposal, the applicant has proposed that the project will issue a NOI to comply with the NPDES general construction permit, will develop a SWPPP for construction, will modify and comply with existing ECGS SWPPP for operations (modified to include the proposed project), and will comply with the NPDES for dewatering.

Therefore, with respect to potential violations of LORS, staff concludes that the proposed project would have no impact.

**D. Depletion of Groundwater Supplies or Recharge: No Impact**

The project does not propose to use groundwater for project use. The increase in impervious area will be limited to the new CTG/HRSG power block located within a 2.8 acre area. Correspondingly, the increase in storm runoff should be minimal. No other above-ground or permanent structural changes would be made to the existing 150-acre ECGS site. Therefore, the proposed project will not significantly reduce groundwater recharge.

Staff concludes that the proposed project will have no impact on groundwater supply or groundwater recharge.

**E. Substantial Alteration of Drainage Patterns Causing Erosion or Siltation: Less than Significant with Mitigation Incorporated**

Without mitigation, the proposed project would alter the existing drainage pattern of the site during construction, potentially resulting in substantial erosion or siltation.

Although the proposed project will be constructed on previously disturbed land, construction, grading and excavation will cause significant, additional land disturbance of 12.5 acres for a period of 20 months. Permanent structures will be constructed within a 2.8-acre area. Construction of the new CTG/HRSG power block will require excavations to a depth about 4 feet to mitigate for moderately expansive

and compressive soils. Flatwork will require excavation to a depth of about 2 feet. In addition, excavation of about 1.2 acres will be required for the construction of the project's fuel gas supply lines and electrical interconnection line. The temporary construction laydown, parking and trailer area will require the grading of about 8.5 acres. The land disturbance that will occur over the 20 months of construction would increase the potential for water and wind erosion or siltation at the project site during this period.

The drainage conditions for the completed project are designed to minimize disruption and restore the pre-existing drainage system. Excavation for foundations but no grading will be performed for the construction of the power block. In addition, the power block will be elevated above the existing grade to maintain the existing stormwater drainage paths. Finally, all temporary construction areas will be restored to pre-construction conditions when construction is completed. Given these measures, the long term project impacts to the drainage pattern are unlikely to be significant.

In the absence of mitigation during construction, the impacts could be significant. However, the applicant has proposed four soil mitigations are focused to address the potential for soil erosion and stormwater management during construction. Although the project description includes proposals to preserve and restore pre-existing drainage conditions, no specific mitigations are proposed. However, given the fact that the site was previously disturbed, the potential for long term impacts siltation and erosion are not expected.

Staff concludes that project's potential to cause substantial erosion and siltation through the alteration of the existing drainage pattern would be less than significant with incorporation of the applicant's proposed mitigation.

#### **F. Alteration of Drainage Resulting in Flooding: Less than Significant Impact**

The project alteration of the existing drainage pattern of the site would not substantially increase the rate of surface runoff in a manner which would result in flooding on- or off-site.

The project area will be constructed within a portion of the ECGS that is serviced by an existing, NPDES-permitted drainage system. During construction, grading for the 8.5-acre on-site area for temporary laydown, parking and trailers will be designed to direct stormwater to the existing drainage point for the project area. The increase in impervious area for the proposed project will be limited to the 2.8-acre area in which the new CTG/HRSG power block will be constructed. Therefore, the increase in storm runoff from the completed project will be minimal. In addition, to maintain the existing stormwater drainage paths, the power block will be elevated above the existing grade. The existing ECGS SWPPP for industrial activities will be updated to reflect the addition of the proposed project, but no changes to the existing stormwater system have been proposed or are anticipated.

Staff concludes that the potential for on- and off-site flooding that would be caused by project alteration of the existing drainage pattern would be a less than significant impact.

#### **G. Excess Runoff or Contribute to Polluted Runoff: Less than Significant with Mitigation Incorporated**

The project, as proposed, would not create or contribute runoff water which would exceed the capacity of existing stormwater drainage systems. However, without mitigation, the proposed project would potentially create or contribute runoff water that would provide substantial additional sources of polluted runoff.

The existing drainage system is designed and permitted to service the entire ECGS site. The increase in impervious area for the proposed project will be limited to the 2.8-acre area in which the new CTG/HRSG power block will be constructed. Therefore, the increase in storm runoff from the completed project would not exceed the capacity of the existing stormwater drainage system.

Prior to construction, the project will submit a NOI to comply with the NPDES for Construction Activities and will develop and implement a SWPPP. The SWPPP will identify and assess the potential sources of pollutants, will specify drainage control measures and will include other the appropriate BMPs to reduce or prevent erosion, siltation, and pollutants in stormwater discharges. In addition, the applicant specifically includes the development and implementation of the SWPPP in three proposed mitigations (IID2006a, Soil 1, Soil 2 and Soil 4) that address the protection of water, as well as soil, resources.

To avoid stormwater contact with equipment, the power block will be elevated about one foot above the existing grade. Control gates for the stormwater collected by the existing drainage system, which will continue to provide drainage for the proposed project during and after the completion of construction, allow project personnel to inspect and test stormwater prior to discharge to the Central Drain. If the stormwater is contaminated, it is pumped by vacuum truck and disposed of properly off-site. By this process, no polluted runoff would be discharged from the site.

Staff concludes that the project would not create or contribute runoff water that would exceed the capacity of existing stormwater drainage systems. Staff further concludes that the project's potential to cause substantial sources of polluted runoff would be less than significant with incorporation of the applicant's proposed mitigation.

(Specific provisions for the management of spills and contaminated stormwater from chemical storage areas and other hazardous areas on site are addressed in the Hazardous Waste section of the Draft Initial Study.)

#### **H. Degradation of Water Quality: Less than Significant with Mitigation Incorporated**

The applicant has proposed appropriate plans and mitigations to manage contaminated wastewater, sanitary wastes and stormwater in accordance with

applicable LORS. Staff therefore concludes that the project's potential to substantially degrade water quality would be less than significant with incorporation of the applicant's proposed mitigations.

**I. Place Housing within 100-Year Flood Zone: No Impact**

The project would not place housing within the 100-Year Flood Zone. The proposed project does not include a housing element. Furthermore, the proposed project is not located within a designated 100-year flood zone according to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for the El Centro area.

Staff concludes that the proposed project would create no impact to housing with respect to flooding.

**J. Place Structures within 100-Year Flood Zone Which Would Impede or Redirect Flood Flows: No Impact**

The project will not include structures that would impede or redirect flood flows within the 100-year flood zone because the proposed project is not located within a designated 100-year flood zone according to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for the El Centro area.

Staff concludes that the structures constructed for the proposed project would cause no impact to flood flows within the 100-year flood zone.

**K. Flood Damage Risk: Less than Significant Impact**

The proposed project would not expose people or structures to a significant risk of loss, injury or death involving flooding.

The project is located within an active alluvial floodplain. The applicant reports that the project site would be subject to surface water flow during periods of intense rainfall. However, existing ECGS drainage system will provide adequate drainage for the proposed project during and following construction. During construction, grading for the 8.5-acre on-site area for temporary laydown, parking and trailers will be designed to direct stormwater to the existing drainage point for the project area. The increase in impervious area for the proposed project will be limited to the 2.8-acre area in which the new CTG/HRSG power block will be constructed. Therefore, the increase in storm runoff from the completed project will be minimal. In addition, the Unit 3 power block, which will be the only new above-ground structure built for the project, will be elevated above the existing grade to maintain the existing stormwater drainage paths.

Therefore, staff concludes that the proposed project is designed to manage on-site flooding and would not expose people or structures to significant risk; the impact due to on-site flooding would be less than significant.

**L. Exceed RWQCB Wastewater Treatment Requirements: Less than Significant with Mitigation Incorporated**

Without mitigation, stormwater from the proposed project during construction would be expected to exceed RWQCB wastewater treatment requirements. However, the proposed project's stormwater and wastewater would be discharged in accordance with the applicable RWQCB requirements.

The applicant has proposed compliance with NPDES, implementation of a SWPPP for construction, and four soil mitigation measures designed to avoid and prevent siltation and pollution of stormwater during construction. The existing ECGS NPDES and SWPPP for Industrial Activities will be modified and applied to the new project.

Staff concludes that the project's potential to exceed RWQCB wastewater treatment requirements would be less than significant with incorporation of the applicant's proposed mitigation.

**M. New Water or Wastewater Treatment Facilities Causing Significant Environmental Effects: No Impact**

No expansion or construction of water or wastewater treatment facilities has been proposed for this project.

The applicant has offered to cap water usage for the proposed project at 1,029 acre-feet/year, the average annual rate of the current Unit 3 system. Raw water for the ECGS is currently treated by a demineralization system to provide high quality make-up water for steam cycles. No modification to this system has been proposed. The applicant reports that the existing demineralization system has sufficient capacity to meet the anticipated requirements of the proposed project.

There will also be no long term increase in potable water demand because there will be no change in the number staff required to operate the proposed project. Potable water for workers during construction was not evaluated.

Process wastewater for the proposed project will be discharged in compliance with the existing ECGS NPDES, which will be modified to include the repowered Unit 3 (CEC/LDBOND2006b). IID is in the process of constructing two Class I non-hazardous wastewater deep injection wells that are being designed for the disposal of all ECGS wastewater, including the proposed project. IID anticipates that the wells will be in operation and available to receive wastewater from the project by the start date of commercial operation. In terms of environmental assessment, these wells are being constructed and permitted as a separate project and will be constructed whether or not the proposed project is approved. Therefore, environmental impacts of this waste facility will be evaluated independently from the proposed Unit 3 repower project.

No expansion or construction of sanitary waste facilities have been proposed for the project because there will be no change in the number personnel required to operate the proposed project. The construction workforce will average 73 workers over a 20-

month period. Staff assumes that sanitary wastes will be trucked offsite to be treated at an existing wastewater treatment facility during construction.

Staff concludes there will be no impact to the environment with respect to treatment facilities for the project because no expansion or construction of water or wastewater treatment facilities will be required.

#### **N. New Stormwater Drainage Facilities Causing Significant Environmental Effects: No Impact**

No expansion or construction of stormwater drainage systems have been proposed for this project.

The existing drainage system is designed and permitted to service the entire ECGS site. The increase in impervious area for the proposed project will be limited to the 2.8-acre area in which the new CTG/HRSG power block will be constructed. The potential additional amount of runoff generated by the project will be insignificant relative to the capacity of the existing stormwater drainage system. Therefore, the increase in storm runoff from the completed project would not exceed the capacity of the existing stormwater drainage system.

Staff concludes that there will be no impact to the environment with respect to stormwater drainage facilities for the project because no expansion or construction of stormwater facilities will be required.

#### **O. Water service resources and entitlements: No Impact**

The existing raw and potable water supplies for the ECGS will be sufficient to service the proposed project.

There are no proposed changes in the amount of raw water required for the operation of the proposed project. The applicant has offered to cap water usage for the proposed project at 1,029 acre-feet/year, the average annual rate of the current Unit 3 system. The applicant proposes to continue to use Colorado River water from IID's Dogwood surface canal and the existing water delivery system, which serves the ECGS plant, including Unit 3. Raw water may also be needed for dust suppression during construction. No estimate of the amount of water required for construction was provided. However, IID has senior water rights for 3.1 million acre-feet/year of Colorado River water, so staff assumes that water demand for construction will be insignificant with respect to supply.

There will also be no long term increase in potable water demand because there will be no change in the number of personnel required to operate the proposed project. Potable water for workers during construction will be limited to a 20-month period and was not evaluated.

Staff concludes that there will be no impact with respect to water supply resources or entitlements because the project proposes no increase in the operational water demand and IID has ample water entitlements to meet water demand during construction.

**P. Wastewater Treatment Service Capacity: No Impact**

The project applicant has proposed to provide and to operate the wastewater treatment facilities for the project. The applicant has adequate capacity to serve the project's projected demand in addition to the existing commitments.

Process wastewater for the proposed project will be discharged in compliance with the existing ECGS NPDES, which will be modified to include the repowered Unit 3 (CEC/LDBOND2006b). Under the existing NPDES permit, IID is constructing two Class I non-hazardous wastewater deep injection wells designed with sufficient capacity for the disposal of wastewater for the entire ECGS, including process wastewater generated by the proposed project.

The applicant proposes the use of existing ECGS facilities, a septic system located within the existing 150-acre ECGS property, for sanitary wastewater disposal. The existing facilities will have sufficient capacity because there will be no change in the number of personnel required to operate the proposed project. Staff assumes that, during construction, sanitary wastes will be trucked offsite to be treated at an existing wastewater treatment facility with sufficient capacity during construction.

Staff concludes that there will be no impact with respect to capacity limits of the proposed wastewater treatment facilities because the project proposes no increase in the volume of wastewater currently generated by the project.

**Q. Surface Water Protection, Conservation and Alternatives: Less than Significant with Mitigation Incorporated**

SWRCB Policy Resolution 75-58 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 policy stems from California's historical challenge to manage its limited water resources. The state anticipates that the demand for fresh water will continue to exceed supply for the foreseeable future and that critical shortage will continue to occur periodically.

IID has senior water rights to 3.1 million acre-feet of Colorado River water per year and has proposed to use fresh inland water from the Colorado River for El Centro Unit 3 Repower Project cooling operations. Fresh water from Colorado River has been supplied by IID to the entire ECGS for cooling since its inception.

Although the applicant has proposed the continued use of fresh water, the construction of the Unit 3 Repower Project will significantly increase water use efficiency of Unit 3 with respect to power production. Based on average ambient conditions, the proposed project will use approximately 7,400 gallons/megawatt for a 24-hour operating day in contrast to the existing use of over 18,500 gallons/megawatt for the same operating period (IID2006a). Given these anticipated conditions, the applicant has offered to cap the amount of water to be used for the El Centro Unit 3 Repower Project at the current water-use rate of the existing Unit 3, 1,029 acre-feet/year. The proposed project would also require no change in the water delivery system or the existing water treatment systems.

The applicant evaluated four potential water supply alternatives for the project: (1) groundwater, (2) irrigation return flows, (3) municipal wastewater and (4) potable water. The applicant concluded that all four options would be cost-prohibitive because of significant capital costs to develop a new water delivery system. Water is currently piped to the ECGS from IID's Dogwood canal, located adjacent to the ECGS site. Although staff has not conducted a specific cost analysis for each alternative, staff confirms that all four alternatives would require the planning, permitting and construction of an additional project component. Any of the alternatives would require the development of either groundwater wells or an off-site linear delivery system, which would require a significant increase in capital outlay. In contrast, the use of the existing water supply would require no additional cost.

The applicant also states that the use of groundwater, irrigation return flows or municipal wastewater return flows would require the development of new water treatment systems, given the poor quality of these supplies. Staff confirms that the high concentration of total dissolved solids (TDS) in groundwater, as well as additional contaminants in irrigation return flows and municipal wastewater are well-documented (CDWR2003, Loeltz1975, UCCE2006, RWQCB2004).

The applicant identifies two conflicts with existing regional plans if the project were to use irrigation return flows or municipal wastewater. First, the applicant states that the El Centro Wastewater Treatment Plant does not treat or distribute wastewater for industrial use. Based on a review of the NPDES permit for the El Centro wastewater treatment plant, treated wastewater is discharged to the Imperial Valley Central Main Drain, which subsequently discharges to the Alamo River. Staff confirms that industrial use is not one of the designated beneficial uses for these waters cited in the NPDES permit (RWQCB2004). Second, the applicant cites plans by the Salton Sea Ecosystem Restoration Program (Program), under development by CDWR and the CDFG, to use irrigation return flows and municipal waste water. Staff has verified the Program's need to use all available flows for restoration (CEC/LDBOND2006a). In addition, although the Program does not cite groundwater as a source of water for the restoration project, staff notes that groundwater discharge does contribute to inflows of the Salton Sea. As a result, any use of groundwater would capture water that would otherwise discharge to the Salton Sea.

Finally, the applicant does not consider potable water a real alternative to the current water supply because, in the Imperial Valley, both potable water and irrigation water are derived from the same source, the Colorado River. Staff verifies that the Colorado River is the sole source for the City of El Centro's potable water supply (WEF2006).

The other potential method of cooling available to the proposed project could be dry cooling. The applicant did not consider the use of dry cooling. Staff has not conducted a detailed analysis of the economic or environmental feasibility of dry cooling; however, staff acknowledges that dry cooling would require the planning, permitting and construction of an additional project component and a significant increase in capital outlay for the proposed project.

In conclusion, staff does not usually support the use of fresh inland water for power plant cooling, in keeping with SWRCB Policy Resolution 75-58. However, based on this assessment, staff concludes that potable water and brackish water supplies are not viable alternatives.

Staff recognizes that the design of the proposed project will provide a significant increase in water use efficiency. In addition, no increase in water use would be required for the new project if the applicant's proposed cap on water use were implemented. Staff concludes that the project has proposed the best alternative for water conservation, excluding the use of dry cooling. Staff further concludes that although implementation of dry cooling may be an environmentally viable alternative, it would require the construction of a new cooling system.

Based on this analysis, staff recommends the approval of the proposed water supply and the implementation of the applicant's proposal to cap water use at the current rate. Accordingly, staff recommends that a water use limit of 1,029 acre-feet/year be included in the conditions for exemption (**Soil&Water-1**). With the inclusion of this proposed condition, staff concludes that the impact of the project's proposed use of fresh water will be less than significant.

## CUMULATIVE IMPACTS

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The proposed El Centro Unit 3 Repower Project has the potential to contribute to the depletion of fresh water and to contribute to the degradation of water quality in the Imperial Valley. Colorado River water, from which the project water supply will be derived, is a finite resource. It is virtually the only source of water for the Imperial Valley. Furthermore, the Colorado River is a major source of supply for most of the southern California region (WEF2006). Given the importance of fresh water to the region, the conservation of the fresh water supply and the management of water quality are paramount to the sustainability of the region.

California is facing both immediate and long-term effects of a diminishing supply of Colorado River water and rapidly increasing demands for water, particularly in the greater Los Angeles and San Diego region, which the Colorado River serves. The state has been using Colorado River water in excess of its entitlement since 1953 (with the exception of two very wet years). California's consumption has often exceeded its entitlement by up to 1 million acre-feet per year (MAFY). To put consumption in perspective, one million acre feet is enough water to annually supply about 2 million average households, which could meet the consumptive needs of about 6.4 million people. In 2003, California was faced with a significant reduction in its Colorado River water supply. Beginning in 2003, California was required to reduce its normal-year consumption to its legal entitlement of 4.4 MAFY. Although this reduction directly applied only to the entities that have junior water rights to Colorado River water, including the Metropolitan Water District and the Coachella Valley Water District, the reduction effectively has increased the demand for water regionally and statewide.

Except for fresh water imported from the Colorado River, the water quality of the Imperial Valley is seriously impaired. Degraded and contaminated runoff, primarily as

irrigation return flows, has impaired the water quality of agricultural drain water, rivers, groundwater and the Salton Sea (UCCE2006). The accumulation of contaminants in the Salton Sea has increased to a point that remedial action has been required. CDWR and the CDFG are actively developing a restoration program for the Salton Sea.

The applicant has incorporated several measures to address these cumulative water supply and water quality impacts. The applicant has proposed a project that is engineered to significantly increase the efficiency of water use with respect to power generation. Based on average ambient conditions, the proposed project will use approximately 7,400 gallons/megawatt for a 24-hour operating day in contrast to the existing use of over 18,500 gallons/megawatt for the same operating period (IID2006a). Furthermore, the applicant has offered to cap water use at the current rate. To avoid the impairment of water quality, the applicant will comply with all water quality standards and wastewater discharge requirements. The applicant proposes to comply with requirements of an NPDES permit, to develop a SWPPP, to implement BMPs during construction and operation, and to implement soil mitigations to control erosion, siltation and pollution.

These measures will reduce the potential for proposed project to increase the depletion of the fresh water supply or to impact water quality to a level of less than significant. Therefore, staff concludes that the project would not contribute to cumulative adverse impacts to soil or water resources or to water quality.

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

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No comments from agencies or the public have been received at this time.

## **CONCLUSIONS**

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The applicant has proposed to maintain the existing water supply system, using fresh inland water from the Colorado River for cooling. In keeping with SWRCB Policy Resolution 75-58, staff does not usually support the use of fresh inland water for power plant cooling.

Several alternative cooling systems were considered. The staff evaluated four potential water supply alternatives available to the project: (1) groundwater, (2) irrigation return flows, (3) municipal wastewater and (4) potable water. All four alternatives would entail significant additional capital costs and new construction. There are also water-use conflicts with regional restoration plans to use irrigation return water and municipal waste water. In addition to alternative water supplies, staff considered the use of dry cooling. Although implementation of dry cooling may be an environmentally viable alternative, it would significantly increase project costs by creating the need to construct a new cooling system. Staff concludes that the alternative cooling systems do not offer sufficient benefits to outweigh the costs associated with these alternatives.

Staff recognizes that the design of the proposed El Centro Unit 3 Repower Project would provide a significant increase in water use efficiency. In addition, no increase in

water use would be required for the new project if the applicant's proposed cap on water use were implemented.

Based on this assessment, staff recommends the approval of the proposed water supply with adoption of condition for exemption (**Soil&Water-1**), which caps water use at the existing current rate of 1,029 acre-feet/year. With incorporation of the applicant's proposed mitigations and the staff's recommended condition of exemption, staff concludes that the construction and operation of the proposed project will cause no substantial adverse impact to soil or water resources, the environment, or the public.

## **PROPOSED CONDITIONS OF EXEMPTION**

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**SOIL&WATER-1** In order to track water usage at the facility and ensure that water usage is within the applicant's stated 1,029 acre-feet per year, the project owner shall install metering devices and record on a monthly basis the amount of water used by the project. The project owner shall prepare an annual report on the amount of 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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# TRAFFIC AND TRANSPORTATION

James Adams

## INTRODUCTION

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In this section, staff has analyzed the effects of the construction and operation of the proposed El Centro Unit 3 Repower Project on the surrounding transportation systems and roadways, and recommends mitigation measures to avoid or lessen those impacts.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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Federal, state, and local LORS that are applicable to the proposed project are listed below. Staff uses LORS as significance criteria to evaluate whether the proposed project would have a significant adverse impact on the environment. The Imperial Irrigation District (IID or applicant) has indicated its intent to comply with all federal, state, and local LORS.

### 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 must comply with the “Manual of Traffic Controls for Construction and Maintenance of Work Zones.”

## **LOCAL**

The 2003 Circulation and Scenic Highways Element of the Imperial County General Plan identifies existing roadway conditions and trends, levels of service (LOS)<sup>1</sup>, standards for traffic, and other transportation modes including public transit service (Imperial County 2003). Imperial County’s policies related to traffic and circulation needs are identified.

The 2004 Circulation Element of the City of El Centro’s General plan addresses all facets of circulation including streets and highways, transportation corridors, public transit, railroads, bicycle and pedestrian facilities, and commercial and general airports. One pertinent policy requires that new development proposals be reviewed to ensure that adequate parking is provided and increased traffic on roadways and intersections would not reduce the LOS to worse than “C”, unless the project would provide overriding socioeconomic benefits (City of El Centro 2004).

The 2004 Southern California Association of Governments (SCAG) 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 in five southern counties, including Imperial County (SCAG 2004).

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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 an 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.

## SETTING

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The major highways in the general area of the project site are State Route 111 (SR-111), SR-86, and Interstate 8 (I-8) (see **TRAFFIC AND TRANSPORTATION FIGURE 1**). The local roadways potentially affected by the proposed project are Dogwood Road, West Villa Avenue, Commercial Avenue, and Main Street. Dogwood Road and West Villa Avenue would provide the primary access to the project site from I-8 (see **TRAFFIC AND TRANSPORTATION FIGURE 2**). The project is located on West Villa Avenue near the intersection with Dogwood Road, approximately two miles north of I-8. The critical roads and highways in the area of the project site are:

I-8 is a major east-west interstate with at least two lanes in each direction and provides access to San Diego to the west, and Arizona and beyond to the east. It is approximately two miles south of the project site.

SR-111 is located about two miles east of the project site and is a four-lane north-south highway connecting Imperial, Riverside and other counties to the north, and it carries most of the truck traffic in this part of Imperial County.

SR-86 is one of two regional east-west travel routes in the project vicinity and is a two-lane highway connecting I-8 and I-10. It is used to transport agricultural commodities from Imperial County to Southern California distribution hubs. SR-86 enters the City of El Centro from the north and bisects the City about a mile west of the Project site before heading south.

Dogwood Road is a north-south two-lane local roadway that provides access to I-8 and Villa Avenue.

Villa Avenue is an east-west two-lane road that provides access to the project site from Dogwood Road.

Commercial Avenue is the first east-west two-lane road south of the project site that connects Dogwood Road and SR-86.

Main Street is an east-west four-lane road that connects Dogwood Road and SR-86.

Most of the roads noted above have an acceptable LOS rating of C or better and have signalized intersections within the project area. However, the intersection of East Villa Avenue and Dogwood Road is not signalized and has one stop sign on East Villa Avenue, near the project site. Dogwood Road has a LOS rating of D and the westbound on-ramp to I-8 at Dogwood Road has a LOS E rating, which may be related to cross traffic congestion when entering the on-ramp.

## AIRPORT

The Imperial County Airport, located three miles northwest, is the closest airport to the project site. Other airports include Brawley Municipal Airport 14 miles to the north, and the Naval Air Facility at El Centro, which is about seven miles north. Douthitt Strip is a private airstrip located in eastern El Centro about a mile southeast of the Project. It has a 1,750-foot long runway (1,500 feet of which is useable) that is used by about 20 single

engine aircraft. The airstrip does not have a control tower or runway lights (Douthitt 2006). There is no protected military airspace over the project site.

## **RAILROAD**

The Union Pacific Railroad operates an active main line that bisects El Centro in a northwest-southeast direction. It is about one-half mile west of the project site at its closest point. San Diego and Arizona Eastern Railroad has an east-west oriented rail line that parallels Commercial Avenue and has a grade crossing across Dogwood Road about one-half mile south of the Project.

## **PUBLIC TRANSIT AND BICYCLE FACILITIES**

Imperial Valley Transit provides bus service throughout Imperial County and operates the El Centro-Holton route which uses Main Street less than a mile from the Project site. Greyhound provides service from El Centro to other portions of Imperial County (Brawley, Calapatria, Niland) and beyond (Greyhound 2006).

The City of El Centro has an extensive bikeway system that utilizes the Caltrans classification of bicycle facilities (Class I, II, and III). The City has adopted a Master Bicycle Plan that is being implemented in phases. Phase 1 is out for bid with a projected cost estimate of \$1.7 million (City of El Centro 2006). There is a Class III bike route along Dogwood Road from Main Street down south of I-8. There is a Class III bikeway on Ross Avenue from Dogwood to 4<sup>th</sup> Street where it becomes a Class II bikeway from 4<sup>th</sup> Street to 12<sup>th</sup> Street, and continues on as a Class III route west to Lotus Avenue (See **TRAFFIC AND TRANSPORTATION FIGURE 2**).

## **IMPACTS**

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The Environmental Checklist is used as a guide for staff's analysis. 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)? |                                | X  |                              |           |
| B. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?  |                                | X  |                              |           |
| C. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?   |                                |  | X                            |           |
| D. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?  |                                | X  |                              |           |
| E. Result in inadequate emergency access?   |                                |  |                              | X         |
| F. Result in inadequate parking capacity?   |                                |  |                              | X         |
| G. Create a significant hazard to the public or the environment through the routine transportation of hazardous material?   |                                |  | X                            |           |

## DISCUSSION OF IMPACTS

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

The project is expected to generate an average of 73 daily round trips of construction workers during the 20 month average construction period, and 93 daily round trips during the six month peak construction period. Because the applicant has not factored in the potential for car-pooling, the above numbers represent the maximum number of vehicle trips during construction. Because operation of the project would not require any additional full-time staff (IID 2006a, pg. 6.9-11), there would be no traffic impacts.

In addition, the applicant estimates that there would be an average of five truck deliveries per day during construction. Adjusting the truck trips to passenger car equivalents (one truck is equivalent to three cars) would result in 15 car trips, or 88 total average round trips, and 108 peak car round trips.

Given the average daily traffic counts for Dogwood Road south of Villa Avenue (7,700), for West Villa (1,155) and for I-8 west or east of Dogwood Road (34,750), staff believes that the increase in the number of vehicles related to project construction would not be significant. However, staff believes that the project owner

should repair any local area road or street that is damaged due to construction of the project (see Condition of Exemption **TRANS-1**).

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

As noted earlier, Dogwood Road currently has a LOS D rating which is more congested than the City of El Centro's acceptable operating condition of LOS C. Other than Dogwood Road, all roads in the local area have a LOS C or better. The project construction traffic would temporarily increase congestion on Dogwood Road. Staff is proposing that a construction traffic control plan be developed by the project owner that would require the use of other local streets such as Main Street (see Condition of Exemption **TRANS-1**). Construction worker traffic would not use the westbound on-ramp from Dogwood Road to I-8 which currently has a LOS E rating.

Operation of the project would not have any traffic impacts since no additional onsite personnel are required, therefore, the LOS ratings for the local roads will not deteriorate.

**C. Change in Air Traffic Patterns: Less than Significant Impact**

The project has no major commercial aviation center in the area. As noted earlier, Douthitt Airstrip is the closest airport to the site (one mile southeast). The airstrip has one 1,750-foot partly paved runway without lights and does not have a control tower. The airstrip owner/manager has advised staff that the airplanes that have permission to use the airstrip do not fly over the project site area (Doughitt 2006). Staff has reviewed the Imperial County Airport Land Use Compatibility Plan and found the project would not interfere with airport operations in the area.

As described in the Small Power Plant Exemption (SPPE) application's Facility Description, the project proposes to add a new combustion turbine and heat recovery steam generator that would be 100 feet tall. The project is not located within any protected military airspace. Representatives from the military have reviewed the project and have concluded that it would not have significant impacts on military flights in the area (NAVAIR 2006).

**D. Increase in Traffic Hazards: Less than Significant with Mitigation Incorporated**

There would be increased vehicle and truck traffic during construction of the project. As noted earlier, the traffic control plan will also address and include measures to reduce construction traffic on Dogwood Road. Workers coming from the north could use SR-86, Main Street, Dogwood Road, and East Villa Avenue to access the project site. Those coming from the east or west could use I-8, SR-86, Main Street, Dogwood Road, and East Villa Avenue to reach the site. These routes would minimize the increase in traffic on Dogwood Road. In addition, workers would not add additional traffic to the westbound on-ramp from Dogwood Road onto I-8.

The applicant has indicated its intent to comply with all weight and load limitations on state and local roadways and would seek permits from Imperial County and Caltrans as needed.

### **E. Emergency Access: No Impact**

The El Centro Police Department has an office in a civic complex in El Centro that includes City Hall, County Government Office, County Courthouse, and the Imperial Irrigation District Headquarters. According to the Police Dispatcher, it would take about ten minutes to reach the project site (City of El Centro 2006c). The nearest fire station is located at 900 South Dogwood Road and the response time would be two to three minutes (City of El Centro 2006d). The nearest hospital is the El Centro Regional Medical Center on Desert Garden Drive near 9<sup>th</sup> Street. Depending on traffic, emergency medical support for the project would take ten to fifteen minutes (City of El Centro 2006e). Most local roads in the vicinity of the project site, with the exception of Dogwood Road, have minimal traffic congestion levels, with LOS expected to remain at C or better.

Staff concludes that the project's construction, including construction workforce commuting activity and truck traffic, would not affect emergency services access to the plant site.

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

Parking spaces will be provided in a designated area within the temporary construction area at the existing El Centro Generating Station (IID2006a, pg. 6.9-8). Staff has determined that this area would be sufficient for the number of workers proposed during the construction phase of the project. Since no new staff will be needed for project operation, additional parking spaces would not be required.

### **G. Transportation of Hazardous Material: Less than Significant Impact**

The construction and operation of the plant would require the transportation of various hazardous materials, including: anhydrous ammonia, solvents, lube oils, paint, paint thinners, adhesives, batteries, and construction gases. The transport of hazardous materials over local streets has the potential to result in an increase in traffic hazards. IID would follow all applicable LORS related to the transportation and storage of hazardous materials (IID2006a, pg. 6.14-1). The SPPE application does not identify a route for hazardous materials delivery but staff anticipates that based on the current truck route, hazardous materials delivery would use I-8 to Dogwood Road to Villa Avenue to reach the Project site. Further discussion of hazardous materials can be found in the **HAZARDOUS MATERIALS MANAGEMENT** section of this Initial Study. Because the project would follow all applicable LORS related to the transport and storage of hazardous materials, staff does not anticipate an adverse significant impact related to the transportation of hazardous materials.

## **CUMULATIVE IMPACTS**

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The applicant notes that cumulative transportation impacts could occur if the construction of the project were to overlap with other proposed projects not previously identified in the Land Use section of the SPPE application (IID2006a, pg. 9.9-15). There are five approved projects, one industrial and four commercial, within one mile of the project. Two of the commercial projects are located south of the proposed El Centro Unit 3 Repower Project along or near Dogwood Road. One of the approved projects is

scheduled to start construction in September 2007 and the other is scheduled for May 2008 (City of El Centro 2006b). There may be some overlap with the construction of the project. The other projects are in the early environmental review phase or are speculative at this time. Dogwood Road is scheduled to be widened from two to six lanes. There is no timeline as to when the widening would take place (City of El Centro 2006e). Staff is proposing Condition of Exemption **TRANS-1** to schedule heavy equipment and building materials deliveries at off-peak hours; identify a route for hazardous materials transportation; and require workers to use a specific route to the project site. Therefore, staff believes that there would be no significant cumulative transportation impacts.

## **RESPONSE TO AGENCY COMMENTS**

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Staff has not received any agency comments.

## **CONCLUSIONS**

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Staff believes that if the applicant develops a construction traffic control and implementation program, as proposed in Condition of Exemption **TRANS-1**, and obtains all applicable permits from the City of El Centro and Imperial County, and follows Caltrans and the Highway Patrol LORS for the handling of hazardous materials, the project would result in less than significant direct and cumulative impacts to the traffic and transportation system in the local area.

## **PROPOSED CONDITION 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 El Centro, Imperial County, 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;
- encourage heavy vehicles and vehicles transporting hazardous materials to proceed from I-8 to Dogwood Road and Villa Avenue to the project site; and
- require construction workers to use Main Street to access the project site from SR-86 and I-8 to reduce traffic impacts on Dogwood Road.
- document the condition of roads in the vicinity of the Project prior to and after the construction takes place to determine if the roads have been damaged by Project-related traffic. Damaged roads should be returned to their original or as near original condition as possible.

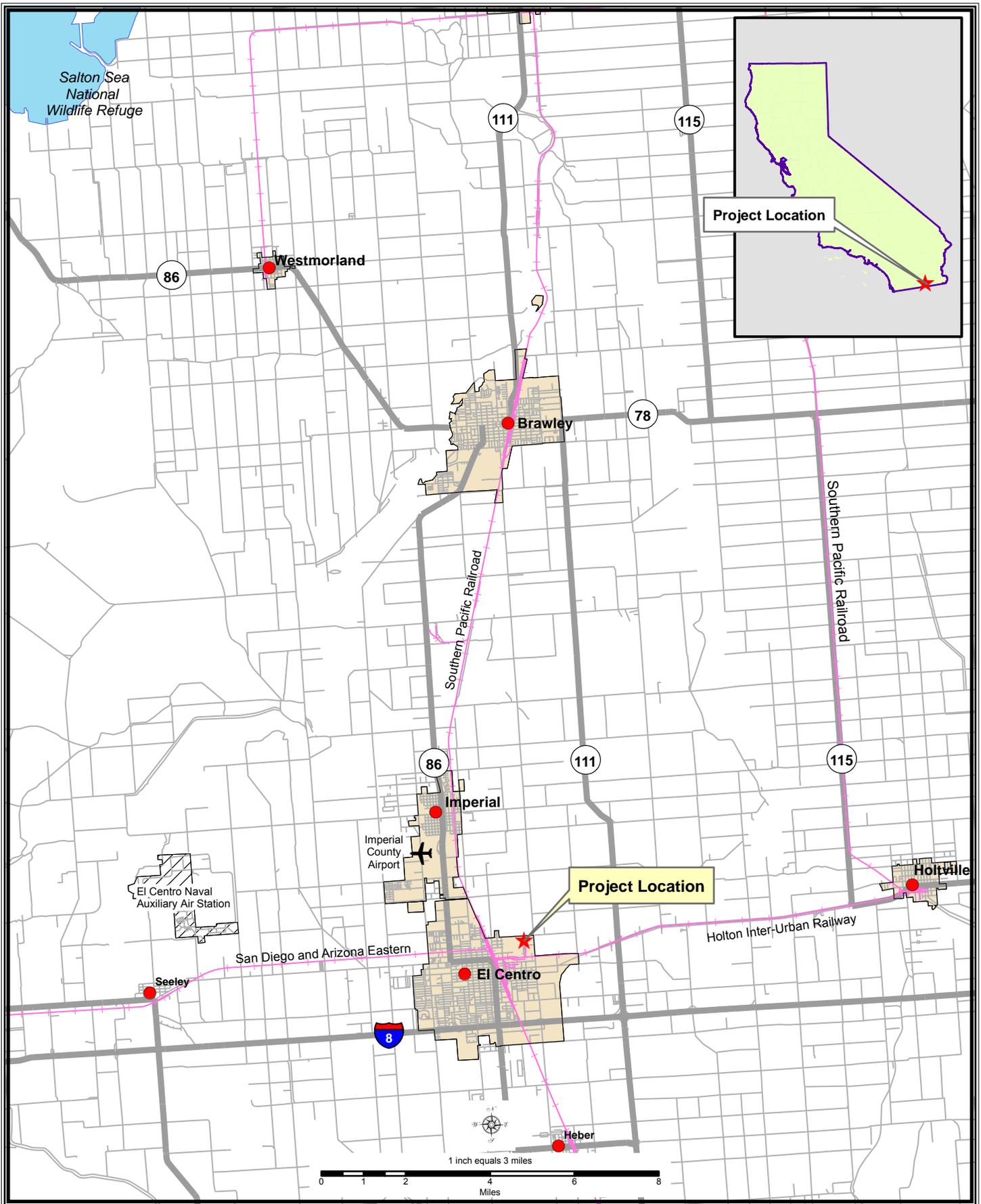
**Verification:** At least 45 days prior to the start of ground disturbance, the project owner shall provide to Imperial County and Caltrans for review and comment, and to the City of El Centro for review and approval, a copy of its construction traffic control plan.

## REFERENCES

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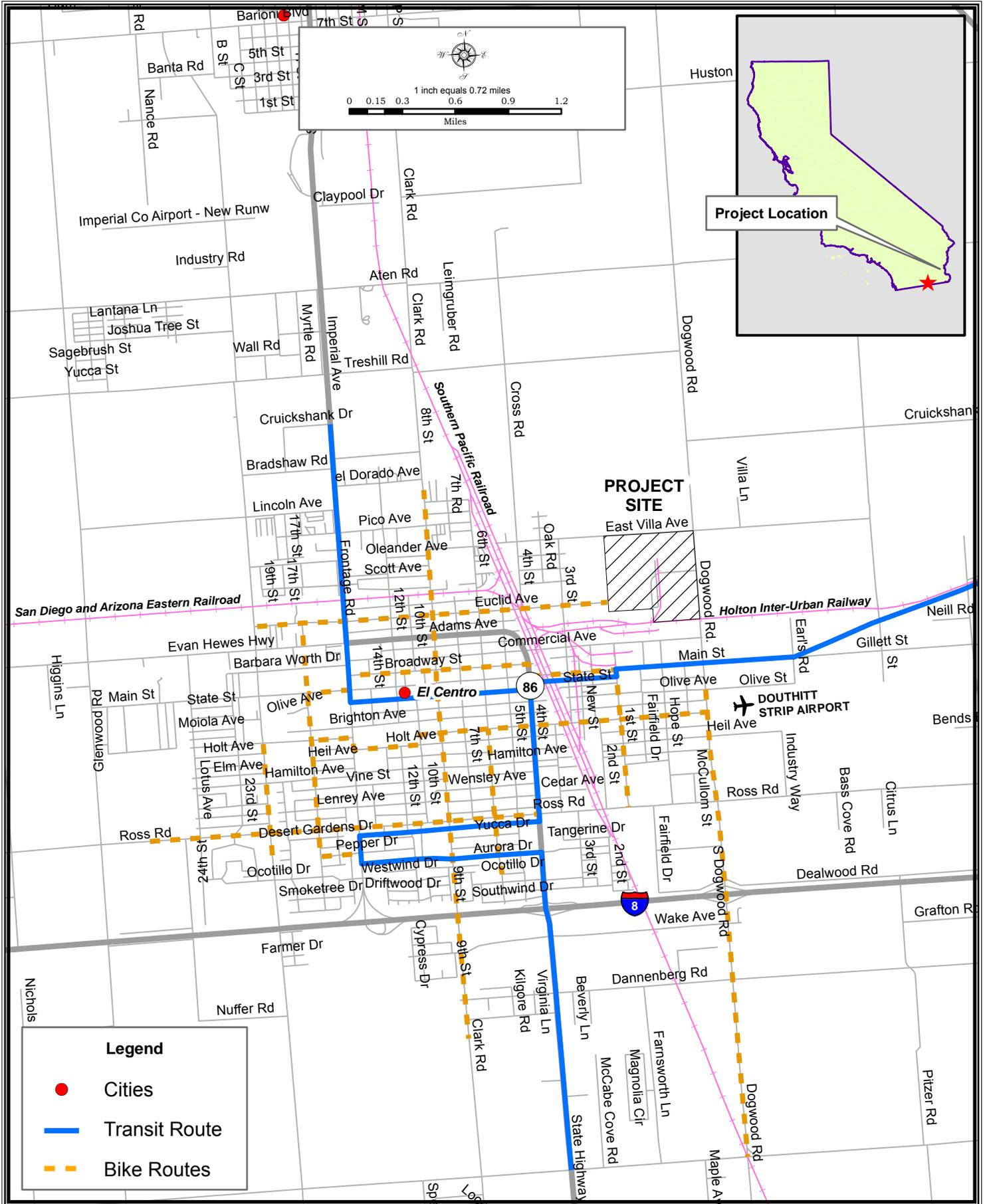
- Airport Land Use Compatibility Plan. Imperial County Airports. June, 1996.
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- City of El Centro 2006a. Personal Communication between Terry Hagan, El Centro Department of Public Works, and James Adams, California Energy Commission, on July 25, 2006.
- City of El Centro 2006b. Personal communication between Rosie Blankenship, Assistant Planner, City of El Centro, and James Adams, on July 28, 2006.
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- City of El Centro 2006d. Personal communication between Fire Chief Tim Reel, El Centro Fire Department, and James Adams, on August 2, 2006.
- City of El Centro 2006e. Personal communication between John Gay, Senior Engineer for the City of El Centro, and James Adams, on August 3, 2006.
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- Southern California Association of Governments 2004. Regional Transportation Plan.

**TRAFFIC & TRANSPORTATION - FIGURE 1**  
SPPE- El Centro Unit 3 Repower - Regional Transportation System



**CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, SEPTEMBER 2006**  
SOURCE: SPPE Figure 6.9-1 & TIGER Line Files

**TRAFFIC & TRANSPORTATION - FIGURE 2**  
**SPPE- El Centro Unit 3 Repower - Local Transportation System**



CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, SEPTEMBER 2006  
 SOURCE: SPPE Figure 6.9-2 & TIGER Line Files

# TRANSMISSION LINE SAFETY AND NUISANCE

Obed Odoemelam, Ph.D.

## INTRODUCTION

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The purpose of this analysis is to assess the line construction and operational plan for the El Centro Unit 3 Repower Project for incorporation of the measures necessary to mitigate any significant potential adverse health and safety impacts.

Staff's analysis focuses on the following issues, which relate primarily to the physical presence of the line, or secondarily to the physical interactions of its 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 requirements of the following LORS as useful significance criteria for evaluating whether or not the proposed line will have any significant adverse health and safety impacts.

### AVIATION HAZARD

The physical presence of the proposed line could pose an aviation hazard to area aviation if the line were to protrude 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.
- GO-128, CPUC, “Rules for Underground Electric Construction”. These rules covers required clearances, grounding techniques, maintenance, and inspection requirements.
- 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).

## **SETTING**

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The El Centro Unit 3 Repower Project is proposed by the Imperial Irrigation District (IID or applicant) to be located within the site of the existing El Centro Generating Station (ECGS) in the City of El Centro, California. According to information from the applicant (IID 2006a, pp. 2-3, 2-7, 2-34, and 4-1), the project's power would be delivered to IID's transmission system using an overhead, 2,350-ft, 92-kV transmission line extending from the project's step-up transformer to the El Centro Switching Station within the ECGS site. This new project line would be located entirely within the ECGS property boundaries. The proposed routing would necessitate relocating two existing 16-kV transmission lines to allow enough separation from the new line as it extends into the ECSS. Since the proposed line would be located entirely within ECGS property lines, there would be no residences in the line's immediate vicinity meaning that the residential field exposures at the root of the health concern of recent years would be mostly insignificant for the line.

As more fully discussed by the applicant (IID 2006a, pp.2-1 and 4-1 through 4-7), the proposed project and related transmission line would be owned, and operated by IID, which would design, build, and maintain it according to IID's design guidelines and construction practices reflecting compliance with applicable safety laws, ordinances, regulations, and standards (LORS), as well as California Public Utilities Commission's (CPUC's) general orders on electric and magnetic field (EMF) reduction. As reflected in the information from the applicant (IID 2006a, pp. 4-2 through 4-7), IID 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.

## **IMPACTS**

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The following is the Environmental Checklist that identifies potential impacts in the area of transmission line safety and nuisance. Below the checklist is a discussion of each type of impact, and the reasons for staff's conclusions regarding the potential for significance.

| <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?  |                                |  | <b>X</b>                     |           |
| B. Lead to interference with radio-frequency communication?   |                                |  | <b>X</b>                     |           |
| C. Pose a hazardous or nuisance shock hazard?   |                                |  | <b>X</b>                     |           |
| D. Pose a fire hazard?  |                                |  | <b>X</b>                     |           |
| E. Expose humans to higher electric and magnetic field levels than justified by existing knowledge? |                                | <b>X</b>   |                              |           |

## DISCUSSION OF IMPACTS

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

As noted by the applicant, (IID 2006a, page 4-2), the line support structures would, at 50-80 feet, be much less than the FAA-specified 200-foot threshold for aviation hazards. Moreover, no public or military airports or heliports are near enough for the line to fall within a restricted air space as defined by FAA. Given these facts, staff does not expect the proposed line to pose a significant collision hazard to area aviation as defined by the FAA.

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

As discussed by the applicant, (IID 2006a, pp4-2, through 4-6), the proposed project line would be designed, erected and operated according to IID's guidelines, which reflect current CPUC safety and field management requirements. Therefore, the line's electric fields would not be 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 92-kV grid lines in concluding that no such noise or television interference would occur in area residences. Staff does not recommend any conditions of exemption in this regard.

### C. Hazardous and Nuisance Shocks: Less Than Significant Impact

The Applicant intends to comply with the requirements of applicable regulations and standards intended to prevent hazardous or nuisance shocks to humans (IID 2006a, p.4-3 and 4-5). Staff does not recommend any related conditions of exemption.

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

The issue of concern to staff is the likelihood of fire from direct line contact with combustible materials or fire generation by sparks from the line. The applicant (IID 2006a, pp. 4-2, 4-3, and 4-7) intends to comply with applicable regulations 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 Condition of Exemption (**TLSN-1**) to ensure the distancing and fire prevention requirements are met.

## **E. Electric and Magnetic Field Exposure: Less Than Significant with Mitigation Incorporated**

Some researchers have concluded that exposure to power-frequency electric and magnetic fields can result in biological impacts at high intensities. However, as noted by the applicant (IID 2006a, p 4-5), power line fields have not been established (at normal environmental levels) to be 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, IID and the other California municipal utilities voluntarily comply with these requirements. The question of concern to staff is whether the proposed line's field reducing design and operation plan would be adequate to maintain possible human exposures within the limits reflected in CPUC's requirements on the issue.

The applicant's intended compliance with their current design and operational practices constitutes compliance with CPUC's requirements on the field and non-field impacts at issue. The strengths of fields from such line designs should be similar to those from IID lines of the same voltage and current-carrying capacity. Any noted reduction should reflect the effectiveness of the applied measures. Staff's recommended **TLSN-1** would be adequate to ensure the safety and reduction efficacy assumed for the proposed overhead project line.

## **CONCLUSIONS**

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Staff has determined that the proposed El Centro Unit 3 Repower Project line 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 transmission line safety and nuisance. The following Condition of Exemption is 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 proposed overhead transmission line 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.

## **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.

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National Institute of Environmental Health Services 1998. An Assessment of the Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields. A Working Group Report, August, 1998.

# TRANSMISSION SYSTEM ENGINEERING

Ajoy Guha, P. E. and Mark Hesters

## INTRODUCTION

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The Imperial Irrigation District (IID, applicant) filed an application for a Small Power Plant Exemption (SPPE) with the California Energy Commission to construct and operate the project, El Centro Unit 3 Repower Project, within the site of their existing El Centro Generating station (ECGS), which is located at the city of El Centro of the Imperial County, California. The project involves installation of a new nominal 80 megawatt (MW), natural gas-fired, combustion turbine generating (CTG) Unit 3 with a heat recovery steam generator (HRSG) by replacing the existing Unit 3 boiler, and converting the existing 44 megawatt (MW) conventional steam Unit 3 to a 48 MW combined cycle steam generating (STG) Unit 3. The project will increase the Unit 3 generating capacity by 84 MW from the existing 44 MW to a total of 128 MW. The STG Unit 3 will maintain its existing interconnection with the El Centro Switching Station (ECSS) and the applicant proposes to connect the new CTG Unit 3 also to the ECSS. The project on-line target date is May, 2009 (IID 2006a, section 1.3).

The Transmission System Engineering (TSE) analysis examines whether or not the facilities associated with the proposed interconnection conforms to all applicable laws, ordinances, regulations and standards (LORS) required for safe and reliable electric power transmission. Staff's analysis evaluates the power plant switchyard, outlet line, termination and downstream facilities identified by the applicant. Additionally, under the California Environmental Quality Act (CEQA), the Energy Commission must conduct an environmental review of the "whole of the action," which may include facilities not licensed by the Energy Commission (California Code of Regulations, title 14, §15378). Therefore, the Energy Commission must identify the system impacts and necessary new or modified transmission facilities downstream of the proposed interconnection that are required for interconnection and represent the "whole of the action." In this analysis the discussion of conformance with the applicable LORS is used to identify potential impacts under CEQA.

The Imperial Irrigation District (IID) is responsible for ensuring electric system reliability in the IID system for addition of the proposed El Centro Unit 3 Repower Project. Commission staff relies on the interconnecting authority or transmission owner, in this case IID, for the analysis of impacts on the transmission grid as well as the identification and approval of required new or modified facilities downstream from the proposed interconnection required as mitigation measures. Since the IID system is not a part of the California Independent System Operator (CA ISO) grid, the CA ISO is not directly responsible for ensuring electric system reliability for the generator interconnection and does not provide any approval for interconnection of the project. The CA ISO, therefore, would not provide in this case any analysis or testimony in the Commission's process. The staff, therefore, has increased responsibility to evaluate the system reliability impacts of the project, and provide conclusions and recommendations to the Commission.

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

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- 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.
- NERC/WECC Planning Standards: The Western Electricity Coordinating Council (WECC) Planning Standards are merged with the North American Electric Reliability Council (NERC) Planning Standards and provide the system performance standards used in assessing the reliability of the interconnected system. These standards require the continuity of service to loads as the first priority and preservation of interconnected operation as a secondary priority. Certain aspects of the NERC/WECC standards are either more stringent or more specific than the NERC standards alone. These standards provide planning for electric systems so as to withstand the more probable forced and maintenance outage system contingencies at projected customer demand and anticipated electricity transfer levels, while continuing to operate reliably within equipment and electric system thermal, voltage and stability limits. These standards include the reliability criteria for system adequacy and security, system modeling data requirements, system protection and control, and system restoration. Analysis of the WECC system is based to a large degree on Section I.A of the standards, “NERC and WECC Planning Standards with Table I and WECC Disturbance-Performance Table” and on Section I.D, “NERC and WECC Standards for Voltage support and Reactive Power”. These standards require that the results of power flow and stability simulations verify defined performance levels. Performance levels are defined by specifying the allowable variations in thermal loading, voltage and frequency, and loss of load that may occur on systems during various disturbances. Performance levels range from no significant adverse effects inside and outside a system area during a minor disturbance (loss of load or a single transmission element out of service) to a level that seeks to prevent system cascading and the subsequent blackout of islanded areas during a major disturbance (such as loss of multiple 500 kV lines along a common right of way, and/or multiple generators). While controlled loss of generation or load or system separation is permitted in certain circumstances, their uncontrolled loss is not permitted (WECC 2002).
- North American Reliability Council (NERC) Reliability Standards for the Bulk Electric Systems of North America provide national policies, standards, principles and guidelines to assure the adequacy and security of the electric transmission system. The NERC Reliability standards provide for system performance levels under normal

and contingency conditions. With regard to power flow and stability simulations, while these Reliability Standards are similar to NERC/WECC Standards, certain aspects of the NERC/WECC standards are either more stringent or more specific than the NERC standards for Transmission System Contingency Performance. The NERC Reliability standards apply not only to interconnected system operation but also to individual service areas (NERC 2006).

- CA ISO Planning Standards also provide standards, and guidelines to assure the adequacy, security and reliability in the planning of the CA ISO transmission grid facilities. The CA ISO Grid Planning Standards incorporate the NERC/WECC and NERC Reliability Planning Standards. With regard to power flow and stability simulations, these Planning Standards are similar to the NERC/WECC or NERC Reliability Planning Standards for Transmission System Contingency Performance. However, the CA ISO Standards also provide some additional requirements that are not found in the WECC/NERC or NERC Standards. The CA ISO Standards apply to all participating transmission owners interconnecting to the CA ISO controlled grid. They also apply when there are any impacts to the CA ISO grid due to facilities interconnecting to adjacent controlled grids not operated by the CA ISO (CA ISO 2002a).

## **EXISTING FACILITIES AND RELATED SYSTEMS**

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The El Centro Unit 3 Repower Project (Unit 3 Repower Project) will be located within the site of the IID's existing ECGS and will be interconnected to the 92 kV bus of the ECSS. IID's service area includes Imperial County and part of Riverside and San Diego counties. The ECSS is strategically located in the middle of the load center of Imperial County or Imperial Valley. Currently the ECGS has four generators with a total generating capacity of 240 MW, Repower Projected unit 2 (CTG: 83 MW and STG: 33 MW), STG Unit 3 (44 MW) & STG unit 4 (80 MW). The El Centro unit 2 Repower Project was implemented in 1994 after reviewed by the Energy Commission as a SPPE in 1991. Upon completion of the Unit 3 Repower Project, the ECGS will have a total generating capacity of 324 MW. The bulk of the power in the IID's transmission system flows through the ECSS as its 92 kV double bus and double breaker system is connected to the existing ECGS generators, the IID transmission grid through twelve 92 kV lines, two step-up (230/92 kV & 161/92 kV) and one step-down (92/34.5 kV) transformers. The switching station is also connected to three 161 kV lines, two of them going north to Coachella Valley and Niland, and the third one going southeast to Pilot Knob hydro generating station. The switching station is also connected to a 230 kV tie line going south to San Diego Gas & Electric Co.'s (SDG&E) Imperial Valley (IV) substation which is an intermediate substation of the 500 kV southwest power link between Hassyampa and Miguel. The IV substation is also connected to the Baja California transmission system in Mexico through three 230 kV lines. The IID system is also interconnected with the Southern California Edison (SCE) system on the north, with the Western Area Power Administration (Western) system on the east and southeast, and the Arizona Public Service Co. (APS) system on the southeast. Instead of importing more power from outside agencies in future, IID seeks to Repower Project El Centro Unit 3 as an efficient base load & intermediate load unit by using their existing generation facility and IID's transmission system will be able to accommodate this new generation without any upgrade. Staff believes that the proposed project would serve

increasing loads of the IID system more reliably. The project would also provide additional reactive power supply and voltage support in the IID system during peak hours.

## **PROJECT DESCRIPTION**

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### **INTERCONNECTION FACILITIES TO THE EL CENTRO SWITCHING STATION (ECSS)**

The new CTG unit would be connected to a 15 kV switchgear through a 5000-ampere non-segregated bus duct and a 5000-ampere circuit breaker. The low voltage terminals of the dedicated generating station unit (GSU) 100/133 MVA, 13.8/92 kV step-up transformer would be connected to the 15 kV switchgear through a 5000-ampere non-segregated bus duct. The high voltage terminals of the GSU transformer would be connected to a new 92 kV overhead line through a 1200-ampere 115 kV breaker. The new single circuit 92 kV overhead line will be about 2,350-feet in length and be built with 795 all aluminum conductor (ACC) on 70-foot high wood poles within the site of the ECSS. The overhead line would terminate at the 92 double bus of the ECSS through a spare switching bay which would include two new 2000-ampere 115 kV breakers. The STG Unit 3 would continue to use its existing GSU 55 MVA, 13.8/92 kV step-up transformer and the overhead line interconnection to the 92 kV double bus and double breaker position at the ECSS. The interconnecting facilities for the new CTG Unit 3 would be constructed, owned and operated by the IID (IID 2006a, Section 2.2.2.3, Page 2-7; Section 4.2, Page 4-1; Figures 2-2A. IID 2006k, Figures E1-1, E1-2 & Attachment D).

The configuration of the new CTG Unit 3 interconnection to the ECSS with the proposed 92 kV transmission line is in accordance with good utility practices and is acceptable to staff.

## **TRANSMISSION SYSTEM IMPACT ANALYSIS**

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For the interconnection of a proposed generating unit or transmission facility to the grid, the interconnecting utility and the control area operator are responsible for insuring grid reliability. For the Unit 3 Repower Project, IID is responsible for insuring grid reliability. In accordance with FERC/CA ISO/Utility Tariffs, System Impact and Facilities Studies are conducted to determine the preferred and alternate interconnection methods to the grid, the downstream transmission system impacts and the mitigation measures needed to insure system conformance with performance levels required by utility reliability criteria, NERC planning standards, WECC reliability criteria, and CA ISO reliability criteria (CA ISO 2002a and 2003a). Staff relies on the studies and any review conducted by the responsible agencies to determine the effect of the project on the transmission grid and to identify any necessary downstream facilities or indirect project impacts required to bring the transmission network into compliance with applicable reliability standards.

The System Impact and Facilities Studies analyze the grid with and without the proposed project under conditions specified in the planning standards and reliability

criteria. The standards and criteria define the assumptions used in the study and establish the thresholds through which grid reliability is determined. The studies must analyze the impact of the project for the proposed first year of operation and thus are based on a forecast of loads, generation and transmission. Load forecasts are developed by the interconnected utility, which would be IID in this case. Generation and transmission forecasts are established by an interconnection queue. The studies are focused on thermal overloads, voltage deviations, system stability (excessive oscillations in generators and transmission system, voltage collapse, loss of loads or cascading outages), and short circuit duties.

If the studies show that the interconnection of the project causes the grid to be out of compliance with reliability standards then the study will identify mitigation alternatives or ways in which the grid could be brought into compliance with reliability standards. If the interconnecting utility determines that the only feasible mitigation includes transmission modifications or additions which require CEQA review as part of the “whole of the action,” the Energy Commission must analyze these modifications or additions according to CEQA requirements.

## **SCOPE OF SYSTEM IMPACT STUDY (SIS)**

The SIS dated February 14, 2006 was performed by K. R. Saline & Associates on behalf of the IID. The study was conducted with a WECC 2008 summer peak full loop case with changes for 2009 summer peak system conditions to reflect IID’s detailed transmission system, forecasted load and generation. The transmission SIS modeling included planned IID system upgrades that would be operational by May, 2009 and queue generation in the IID transmission system higher than the Unit 3 Repower Project. The study included a Power Flow analysis, a Transient stability analysis, a Post-transient Voltage analysis and a Short Circuit analysis. The Power Flow Study was conducted before and after the addition of the Unit 3 Repower Project with a peak load of 1,134 MW for the IID system. The study included two scenarios: one for normally anticipated IID generation dispatch and interchanges, and the other a sensitivity case with maximum available IID generation dispatch and interchanges (IID 2006a & 2006k).

## **POWER FLOW STUDY RESULTS AND MITIGATION**

The SIS demonstrates that the Unit 3 Repower Project would be reliably connected to the IID system without any significant adverse impacts on the transmission facilities of the IID under the 2009 summer peak system conditions studied. The power flow impacts on the tie lines with the interconnecting utilities were found minimal and the interconnecting utilities have concurred with the study results. Staff, therefore, agrees that the Unit 3 Repower Project would not cause any adverse impact on the interconnecting neighboring utility systems of SCE, SDG&E, APS and Western. The power flow study results have been tabulated in the study report and supplementary filings submitted by IID (IID 2006a, IID 2006k, IID 2006n).

Based on the results of the SIS, there are no overloads identified in the IID system due to the interconnection of the Unit 3 Repower Project as proposed under 2009 summer peak normal conditions. However, in the sensitivity case under certain contingency and high demand conditions the study identified the following overloads and corresponding mitigation measures (IID 2006n):

- Dixieland-Dixieland prison 92 kV line: The pre and post-project overloads were found in the study due to outage of the US Navy Field-EI Centro Terminal 92 kV line. However, IID has confirmed that the line has been reconductored with a higher size for a 132 MVA normal rating, thereby eliminating the overloads. Staff considers the mitigation acceptable.
- Midway substation 230/92 kV Transformer: The transformer No. 1 would have substantial pre and post-project contingency overload due to outage of the Midway substation 230/92 kV transformer No. 2 or vice-versa. The mitigation approved by IID includes the planned installation of a Remedial Action Scheme (RAS) at the Midway substation for curtailment of adequate geothermal generation in the collector system. Staff considers the mitigation measure acceptable.
- Coachella Valley 230/92 kV Transformer, Coachella-CI Tap1-Van Buren 92 kV line, Ave 42-CM Tap2-Va Buren 92 kV line: The pre-project overloads on these facilities due to double contingency of the Coachella-Devers and Coachella-Ramon 230 kV lines would reduce to the level of 110 to 113 percent of their respective normal rating due to addition of the Unit 3 Repower project. Mitigation measures as approved by IID include a 15 minute emergency ratings of these facilities based on 115 percent of their normal ratings and during contingency condition operators would take appropriate operational measures to limit the facility loadings to normal ratings. IID is also in the process of implementing a RAS at the Coachella Valley substation that would curtail geothermal generation in the collector system during the above double contingency condition. Staff considers the mitigation measures acceptable.
- Niland-Blythe 161kV line: The pre and post-project overloads were found based on 165 MVA normal rating of the line due to contingency of the Blythe-Knob and Blythe-Eagle Mountain 161 kV lines. Mitigation measures approved by IID include a 30 minute emergency rating of 202 MVA and during contingency condition operators would take appropriate operational measures to limit the line loading to its normal rating. Staff considers the mitigation measures acceptable.
- Ave 58 Tap1-EI Centro switching station 161 KV line: The pre-project overload on this line is exacerbated due to the addition of the Unit 3 Repower project due to outage of the Coachella-Midway #1 & #2 230 kV lines. Mitigation measures approved by IID include a 15 minute emergency rating based on 115 percent of its 165 MVA normal rating and during contingency condition operators would take appropriate operational measures to limit the line loading to its normal rating. Staff considers the mitigation measures acceptable.

## SHORT CIRCUIT STUDY RESULTS

The Short Circuit Study identified an increase in fault currents in the IID system due to the addition of the Unit 3 Repower Project. The highest increase in fault currents by 8.5 percent was observed at the ECSS 92 kV bus. The post-project symmetrical fault current at the ECSS 92 kV bus was 37 kA, was about 93 percent of the 40 kA breaker interrupting rating. Similarly at the Euclid substation the post-project three phase-to-ground fault current was 19.31 kA, about 97 percent of the 20 kA breaker interrupting rating. The study results indicate that with the GSU transformer for the new CTG Unit 3 being modeled with minimum 12.18 percent impedance on 100 MVA base, the existing breaker fault interrupting ratings at the ECSS and Euclid substations would be adequate

for the increased fault currents. The breakers at all other existing substations have adequate interrupting ratings to withstand increased fault currents. The effect of fault levels on the interconnecting tie line substation buses was found to be minimal. The study concludes that with the above specification for the GSU transformer, there would be no adverse short circuit impacts in the IID and interconnected systems. Staff concurs with the study results.

## **TRANSIENT STABILITY STUDY RESULTS**

The study identified no transient stability concerns in the IID system due to addition of the Unit 3 Repower Project. Staff concurs with the study results.

## **POST-TRANSIENT VOLTAGE STUDY RESULTS**

The study shows that for the addition of the Unit 3 Repower Project the post-transient voltage deviations for the critical contingency of the Palo Verde-Devers 500 kV line would remain within acceptable limits. Staff concurs with the study results.

## **DOWNSTREAM FACILITIES**

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Besides the interconnection facilities between the new CTG Unit 3 and ECSS including the GSU step-up transformer and the new 92 kV transmission line, accommodating the power output of the Unit 3 Repower Project would not require any other new downstream transmission facilities. RAS would require installation of protection equipment within the fence line of the Midway and Coachella Valley substations.

## **CUMULATIVE IMPACTS**

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Depending on fast increasing load demands in the IID, the amounts of local generation and reduction in imports to the IID system, staff believes that the addition of the proposed Niland Gas Turbine Plant (NGTP) for 93 MW generation (in 2008) and the concurrent addition of the proposed 84 MW generation (in 2009) for repowering Unit 3 of the El Centro generating station should have minimal or no cumulative impacts on the IID transmission system. The cumulative marginal impacts due to the Unit 3 Repower Project, as identified in the SIS, will be mitigated. Also, staff believes that there would be 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 for the new CTG Unit 3 other than the proposed interconnection to the ECSS. Since this is a repower project the installation of the new CTG Unit 3 with a HRSG is required within the ECGS adjacent to the existing STG Unit 3, which will also maintain its existing shortest interconnection to the ECSS. The proposed interconnection within the fence line of the ECGS and ECSS is shortest with lower environmental impacts and more operational benefits (IID 2006a, Section 1.5). This is allowed under CEQA and acceptable to staff.

## **CONFORMANCE WITH LORS AND CEQA REVIEW**

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In this analysis the discussion of conformance with applicable LORS is used to identify potential impacts under CEQA. The SIS demonstrates that the Unit 3 Repower Project would be reliably connected to the IID system without any significant adverse impacts on the transmission facilities of the IID and interconnecting neighboring systems. The interconnection, therefore, would conform to the NERC/WECC planning standards and IID reliability criteria. The interconnection facilities for the new CTG Unit 3 to the ECSS would be built by the IID according to NESC standards and GO-95 Rules within the fence line of the ECGS and ECSS. The facilities would be in accordance with good utility practices and acceptable to staff, and would have no significant or unmitigated environmental impacts requiring CEQA review.

## **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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1. The SIS demonstrates that the Unit 3 Repower project would be reliably connected to the IID system without any significant adverse impacts on the transmission facilities of the IID under the 2009 system conditions studied. The Unit 3 Repower project would not also cause any adverse impact on the interconnecting neighboring utility systems of SCE, SDG&E, APS and Western, who have concurred with the study results. The protective and operational mitigation measures selected and planned by IID would be effective in eliminating the adverse impacts of the project and ensure system reliability. The interconnection of the Unit 3 Repower project, therefore, would comply with the NERC/WECC planning standards and IID reliability criteria.
2. The proposed interconnecting facilities between the new CTG Unit 3 and the ECSS including the GSU step-up transformer and the new 92 kV overhead transmission line and terminations are adequate in accordance with good utility practices and are acceptable to staff according to engineering LORS.
3. New interconnection facilities would be built within the fence line of the ECGS and ECSS project site and would have no significant or unmitigated environmental impacts. The planned protective mitigation measures would not require any new or modified downstream facilities and would involve installation of protection equipment within the fence line of the Midway and Coachella Valley substations which would not require any CEQA review.
4. The Unit 3 Repower project with a total capacity of 128 MW would allow IID to provide a more efficient base load and intermediate load generating unit, and a reliable local power resource by using IID's existing generating and transmission facilities. Staff believes that the project would also provide additional local reactive power, voltage stability and reduce system losses in the local network during peak hours.

5. Since staff has determined that the proposed Unit 3 Repower project would be interconnected and operated in conformity of the applicable LORS and therefore, requiring no CEQA review, staff is not recommending any Conditions of Exemption.

## **CONDITIONS OF EXEMPTION**

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None

## **REFERENCES**

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- CA ISO (California Independent System Operator) 1998a. CA ISO Tariff Scheduling Protocol posted April 1998, Amendments 1,4,5,6, and 7 incorporated.
- CA ISO (California Independent System Operator) 1998b. CA ISO Dispatch Protocol posted April 1998.
- CA ISO (California Independent System Operator) 2002a. CA ISO Planning Standards, February 7, 2002.
- CA ISO (California Independent System Operator) 2003a. CA ISO, FERC Electric Tariff, First Replacement Vol. No. 1, March 11, 2003.
- IID (Imperial Irrigation District) 2006a. Application for the Small Power Plant Exemption for the El Centro Unit 3 Repower project dated 5-17-06. Appendix A-System Impact Study dated February 14, 2006 by K. R. Saline & Associates. Docketed on 5-19-06.
- IID (Imperial Irrigation District) 2006k. First Round Data Responses Part 1, Transmission System Engineering dated 7-7-06. Docketed on 7-12-06.
- IID (Imperial Irrigation District) 2006n. Supplementary First Round Data Response, Part 1, Transmission System Engineering dated 7-27-06. Docketed on 7-28-06.
- NERC (North American Electric Reliability Council) 2006. Reliability Standards for the Bulk Electric Systems of North America, May 2 2006.
- WECC (Western Electricity Coordinating Council) 2002. NERC/WECC Planning Standards, August 2002.

## DEFINITION OF TERMS

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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

Gary Collord

## 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 the proposed modifications to the El Centro Unit 3 Repower Project would cause an impact to visual resources. The determination of a proposed project's potential for visual impact is required by the California Environmental Quality Act (CEQA).

## SETTING

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The project site is within the existing El Centro Generating Station (ECGS) located near the northeast corner of the City of El Centro. The City of El Centro serves as a population hub for the predominantly agricultural Imperial Valley and supports a population of some 39,000 and covers an area of approximately 10 square miles.

Predominant land uses within the City are industrial, commercial and residential. Immediately south of the project site, along Commercial Avenue, lies the City's main industrial area. A railroad corridor which traverses the landscape in a northwesterly to southeasterly direction exists near the southwest corner of the project site. Electrical transmission lines are also a common visual feature in the landscape surrounding the project site. To the north and east, the project site is surrounded by large agricultural fields. A five-square block residential neighborhood exists less than one-half mile to the west of the project site. The project site is some 2.5 miles north of Interstate 8, which travels east to west through Imperial County just south of the City of El Centro.

The topography of El Centro and surrounding areas, including the project site, is generally flat and allows for open, distant views of mountain ranges predominantly to the west. The landscape surrounding the City mostly consists of irrigated agricultural lands supported by water conveyance systems drawing water from the Colorado River (IID, 2006).

## ASSESSMENT OF IMPACTS

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### METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Please refer to **APPENDIX VR-1** for a complete description of staff's Visual Resources evaluation process.

**VISUAL RESOURCES - Figure 1 (photo locations)** shows the areas from which the project would be visible (project viewshed), and the location and view direction of the key observation points (KOP) selected to represent sensitive viewing area(s). The selected KOPs for the ECGS project include the following:

- KOP 1 – view looking east toward the project site from residences located along N. 3<sup>rd</sup> Street.

- KOP 2 – view looking southeast toward the project site from newer residences in the “Victoria Ranch” subdivision north of Cross Road.
- KOP 3 -- view looking west toward the project site from residences north of E. Villa Road.

## DIRECT/INDIRECT IMPACTS AND SIGNIFICANCE

The following discussion of project impacts is organized around the four questions found in the CEQA Guidelines Appendix G Environmental Checklist pertaining to Aesthetics. The four questions and their potential impact significance are shown in **VISUAL RESOURCES Table 1** and discussed below.

**VISUAL RESOURCES Table 1**  
**CEQA Environmental Checklist Form - Aesthetics**

| AESTHETICS – Would the project:  | Potentially Significant Impact | Less Than Significant With Mitigation | Less Than Significant Impact | No Impact |
|--|--------------------------------|---------------------------------------|------------------------------|-----------|
| 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 CHECKLIST ITEMS

### A. Would the project have a substantial adverse effect on a scenic vista? No Impact

A scenic vista for the purpose of this analysis is defined as a distant view through and along a corridor or opening that exhibits a high degree of pictorial quality. There are no scenic vistas in the three KOP views. Also, the project site is not located within an area that has been formally identified as a federal, state, or county scenic vista. The proposed project would have no significant visual impact to a scenic vista.

## **B. Would the project substantially damage scenic resources? No Impact**

In the three KOP views, there are no identified scenic resources (e.g., a unique water feature [waterfall, transitional water, part of a stream or river, estuary]; a unique physical geological terrain feature [rock masses, outcroppings, layers or spires]; a tree having a unique visual/historical importance to a community [a tree linked to a famous event or person, an ancient old growth tree]; historic building; or a designated federal scenic byway or state scenic highway corridor; et cetera). In addition there are no views of the project site from a federal, state, county and city park or other recognized public area for recreation including trails. The project would have no significant visual impact to a scenic resource.

## **C. Would the project substantially degrade the existing visual character or quality of the site and its surroundings? No Impact**

### **Construction Impacts**

Construction of the proposed El Centro Unit 3 Repower Project is expected to last approximately 20 months between September 2007 and April 2009. All construction activities would take place on a 12-acre laydown area within the ECGS site and be concentrated on the west side of the existing steam turbine building. Additional construction activity associated with installation of an overhead transmission line from the Unit 3 generator to the existing El Centro Switching Station (ECSS) would be visible to the north and east (IID, 2006).

Construction activities may cause temporary visual impacts due to the presence of additional equipment, materials, and workforce at the facility. Construction would involve the use and storage of cranes and other heavy construction equipment, storage of materials, and installation of construction trailers and a workforce parking area. Project site preparation activities would include removing existing foundations, transmission towers, rerouting underground piping, and surface grading (IID, 2006).

The proposed construction activities would be concentrated on the west side of the facility and would be the most visible from residences represented by KOP 1. No significant visual degradation of the site or its surroundings would occur. The project's construction activities would result in a less than significant visual effect under this criterion.

### **Operation Impacts**

#### **KOP 1 – View looking east from 3<sup>rd</sup> Street residences**

**VISUAL RESOURCES** Figure 2 presents a photo-simulation of the proposed project as viewed from residences closest to the project site (less than 0.5 miles).

#### **Visual Sensitivity**

The view from KOP 1 includes a vacant, level parcel in the near foreground, and the existing cooling water recharge basins and ECGS facility in the foreground. The structural components of the ECGS dominate the view. The KOP represents the rear-yard view of approximately 16 residences located near the western border of the 58-acre ECGS site. While the view from some residences is obscured by mature

vegetation, the KOP represents an unobstructed view from this location. The visual quality of this KOP view is considered to be low.

Residential viewers are typically considered to be highly sensitive to viewshed modifications. The ECGS facility dominates the view and due to the unobstructed view from residences has high visibility. Because the KOP represents residential views close to the facility, view duration is considered high. The proposed structural modifications would be absorbed into the existing ECGS and, therefore, viewer concern would be low. Combined with the low visual quality and viewer concern, the moderately low number of viewers, the high visibility and high view duration, the overall visual sensitivity from KOP 1 is considered to be moderately low.

### **Visual Change**

The most noticeable change resulting from the proposed modifications would be the addition of the 100-foot tall Unit 3 exhaust stack. The new exhaust stack would improve the facility's symmetry by adding a vertical element to a gap that now exists between the second and fourth exhaust stacks. The scale, color, and texture of the exhaust stack and other structural modifications would be harmonious with existing structural components. Like the existing stacks, the new exhaust stack would have a red stripe to make it visible to aircraft. The proposed modifications would not alter the dominance of the ECGS in the view or further block any view. The overall visual change would be low.

Considering the moderately low visual sensitivity for the viewers and the low level of overall visual change as perceived from KOP 1, the proposed project would not cause a significant adverse visual impact at this KOP.

### **KOP 2 – View looking southeast from “Victoria Ranch” residences off Cross Road**

**VISUAL RESOURCES Figure 3** presents a photo-simulation representing the view of the proposed project from several residences located northwest of the ECGS (approximately one mile).

### **Visual Sensitivity**

The view from KOP 2 consists of irrigated agricultural fields in the foreground and the industrial and electrical transmission components of the ECGS and other industrial land uses of El Centro, in the far middleground. This KOP represents a rear-yard view from several residences located in the newer Victoria Ranch subdivision along Cutoff Road. Because the view is of a disturbed landscape with agricultural and industrial components, the visual quality is moderately low. The ECGS facility has moderate visibility from this KOP due to the distance to the ECGS and the concrete block wall that surrounds the housing complex. Since the KOP represents residential views from second story windows, view duration is considered high. The proposed structural modifications would be easily absorbed into the existing ECGS and, therefore, viewer concern would be low. The overall visual sensitivity from KOP 1 is moderately low.

## **Visual Change**

With the exception of the proposed Unit 3 exhaust stack, the structural modifications to the west side of the ECGS would be largely imperceptible in this view. The overall visual change would be low.

Considering the moderately low visual sensitivity for the viewers and the low level of overall visual change as perceived from KOP 2, the proposed project would not cause a significant adverse visual impact at this KOP.

### **KOP 3 – View looking west from residences off East Villa Road**

**VISUAL RESOURCES Figure 4** presents a photo-simulation representing the view of the proposed project from several residences located east of the ECGS (approximately one-half mile)

### **Visual Sensitivity**

The view from KOP 3 consists of an irrigation ditch and agricultural fields in the foreground view and the industrial and electrical transmission components of the ECGS and an agricultural packing shed, in the middleground. The range of mountains located southwest of El Centro is visible in the background but their visibility is largely blocked by the ECGS.

This KOP represents a view from several residences located along a dirt road north of E. Villa Road. Because the view is of a disturbed landscape with agricultural and industrial components, the visual quality is considered moderately low. The ECGS facility has high visibility from this KOP due to the unobstructed view from residences. Because the KOP represents views from residences, view duration is considered high. The proposed structural modifications would be easily absorbed into the existing ECGS and, therefore, viewer concern would be low. Overall visual sensitivity from KOP 3 is considered to be moderately low.

### **Visual Change**

The proposed structural modifications to the ECGS would be concentrated on the west side of the facility. That portion of the Unit 3 exhaust stack extending above the steam turbine building, and a new overhead transmission line extending east to the switching station, would be the only structural modifications visible from this KOP. The overall visual change would be low.

Considering the moderately low visual sensitivity for the viewers and the low level of overall visual change as perceived from KOP 3, the proposed project would not cause a significant adverse visual impact at this KOP.

### **Cooling Tower and Combustion Exhaust Stack Plumes**

Staff's modeling analysis for cooling tower plumes associated with the El Centro Unit 3 Repower Project modifications indicate that visible plumes are expected to occur less than 20 percent of the time during clear daylight hours. Please refer to **Appendix VR-2** for a detailed discussion of Staff's Visible Plume Modeling Analysis.

The size and frequency of visible plumes would be similar to the existing ECGS plumes, which are considered to have a less than significant impact.

**D. Would the project create a new source of substantial light or glare? Less than Significant Impact**

Nighttime construction of the ECGS modifications may take place to avoid construction during the hottest hours of the day. To provide for worker safety, higher amounts of directional and backscatter lighting may be visible during the construction phase (IID, 2006). Since construction activities would be concentrated on the west side of the steam generator building, where an unobstructed view for the residences closest to the facility exists (KOP 1), construction lighting has the potential to cause a significant impact. To reduce construction night lighting impacts to a less than significant level, staff is proposing Condition of Exemption **VIS-1**.

Upon completion of construction, lighting would be reduced to a level consistent with the facility's existing nighttime lighting conditions. The applicant has proposed lighting design elements for the proposed ECGS modifications to ensure visual impacts would be less than significant during the plant's operation. These include shielding and directing night lighting elements downward, choosing colors and textures designed to minimize light glare, and selecting types and styles of lighting that are aesthetically compatible with the facility's existing lighting features.

## **CUMULATIVE IMPACTS**

As defined in Section 15355 of the CEQA Guidelines (California Code Regulation, Title 14), a cumulative impact is created as a result of the combination of the project under consideration together with other existing or reasonably foreseeable projects causing related impacts. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. In other words, though any one project in a given area may not create a significant impact to visual resources, the combination of the new project with all existing or planned projects in the area may create significant impacts. 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.

The project is generally consistent with the industrial land uses to the south. The proposed modifications to the facility would not alter the project's existing visual presence. Areas north, west, and east of the ECGS have already undergone a significant amount of cultural modification and additional development projects are proposed within one mile (to the northwest) of the ECGS. These include five commercial, one light industrial, and two residential projects. One of the residential projects would include further expansion of the Victoria Ranch subdivision, which was selected as a representative view for KOP 2 (IID, 2006).

The ECGS modifications would not result in significant alteration to the existing landscape, or visual impairment to notable scenic resources. The proposed project's visual impact considering other existing and proposed development would be less than cumulatively considerable.

## CONCLUSION

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The proposed ECGS project would generate a less than significant direct and cumulative visual impact. The location, dimensions, color and surface treatment of the proposed structural modifications would be visually harmonious with the structural features of the ECGS and readily absorbed into the facility's existing visual presence. The potential for visible plume formation is expected to be low. With effective implementation of staff's proposed Condition of Exemption **VIS-1**, potential visual impacts associated with nighttime construction lighting would create a less than significant impact.

## PROPOSED CONDITIONS OF EXEMPTION

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- VIS-1** The project owner shall ensure that lighting for construction of the power plant is used in a manner that minimizes potential night lighting impacts, as follows:
- a) All lighting shall be of minimum necessary brightness consistent with worker safety and security;
  - b) All fixed position lighting shall be shielded/hooded, and directed downward and toward the area to be illuminated to prevent direct illumination of the night sky and direct light trespass (direct light extending outside the boundaries of the power plant site or the site of construction of ancillary facilities, including any security related boundaries);
  - c) Wherever feasible and safe and not needed for security, lighting shall be kept off when not in use; and
  - d) If the project owner receives a complaint about construction lighting, the project owner shall notify the City of El Centro (City) about the complaint and the proposed resolution.

**Verification:** Within seven days after the first use of construction lighting, the project owner shall notify the City in writing that the lighting is ready for inspection.

If the City notifies the project owner that modifications to the lighting are needed to minimize impacts, within 15 days of receiving that notification the project owner shall implement the necessary modifications and notify the City that the modifications have been completed.

Within 48 hours of receiving a lighting complaint, the project owner shall provide to the City a) a report of the complaint b) a proposal to resolve the complaint, and c) a schedule for implementation of the proposal. The project owner shall notify the City within 48 hours after completing implementation of the proposal.

## REFERENCES

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IID2006a – Imperial Irrigation District/J Federowicz (36971) Submittal of the Application for Small Power Plant Exemption (Volumes 1 and 2) for the El Centro Unit 3

## **APPENDIX VR-1: STAFF'S VISUAL RESOURCES EVALUATION METHODOLOGY**

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Visual resources analysis has an inherent subjective aspect. Use of generally accepted criteria for determining environmental impact significance and a clearly described analytical approach aid in developing an analysis that can be readily understood.

Energy Commission staff's (staff) methodology is based on the California Environmental Quality Act (CEQA) Guidelines. The methodology includes an evaluation of the visual characteristics of the existing setting, the visual characteristics of the proposed project, the circumstances affecting the viewer, and the degree of visual impact that the proposed project would cause.

### **ELEMENTS OF THE METHODOLOGY**

#### **Key Observation Points**

A proposed project is potentially visible from a number of areas in a viewshed. Energy Commission staff evaluate the visual impact of the project using a Key Observation Point<sup>1</sup>, or KOP. One or more KOPs are selected to be representative of the most critical locations from which the proposed project would be seen. A KOP is representative of a location from which to conduct a detailed analysis of the project, and includes an existing condition/setting photograph, and simulation of the proposed project using the existing condition photograph.

Prior to application submittal, staff participates in a site visit to select appropriate KOP(s) for the analysis. Other photos to demonstrate the general landscape character of the project area are also included, as appropriate.

#### **LORS Consistency**

Energy Commission staff consider federal, state, and local laws, ordinances, regulations, and standards (LORS) relevant to visual resources. Conflicts with such LORS can constitute significant visual impacts. For example visual staff examines land use planning documents, such as local government General Plans and Specific Plans, and zoning ordinances applicable to the project site and surrounding 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.

#### **Visible Water Vapor Plume Frequency**

Staff models the estimated turbine plume frequency and dimensions for the cooling tower and turbine exhaust using the Combustion Stack Visible Plume (CSVP) model,

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<sup>1</sup> The use of KOPs or similar view locations is common in visual resource analysis. The US Bureau of Land Management and the US Forest Service use such an approach.

and a multi-year meteorological data set obtained for the area where the project is proposed.

A plume frequency of 20 percent of seasonal (typically from November through April) daylight no rain/fog high visual contrast (i.e. "clear") hours is used to determine potential plume impact significance. If it is determined that the seasonal daylight clear hour plume frequency is greater than 20 percent, then plume dimensions are determined and a significance analysis is included in the Visual Resources section of the Staff Assessment for the proposed project. Plume frequencies of less than 20 percent have been determined to generally have a "less-than-significant" impact.

### **California Environmental Quality Act Guidelines**

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 Environmental Checklist Form 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?

Staff answers each of the four checklist questions for the proposed project, including any related facility such as a transmission line or gas pipeline; and for both construction and operation phases.

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.

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.

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.

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 vista?

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 would 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 (quality of a view), followed by an assessment of how the view would be affected by the project. This could be described as an analysis of how well the project area can absorb the project into the landscape.

Staff attempts to determine if the local community values a particular view that may be affected by the project. To do this, staff searches applicable planning documents covering the project area produced by local public agencies, and information prepared by community groups. The Energy Commission gives due deference to official statements by elected governmental bodies concerning the value of visual resources within the project area.

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?

## APPENDIX VR-2

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### VISIBLE PLUME MODELING ANALYSIS

Joseph M. Loyer

#### INTRODUCTION

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The following provides the assessment of the El Centro Unit 3 Repower Project cooling tower and gas turbine exhaust stack visible plumes. Staff completed a modeling analysis for the applicant's proposed unabated cooling tower and turbine design.

#### PROJECT DESCRIPTION

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The applicant has proposed to use an existing four-cell mechanical-draft cooling tower. The applicant has not proposed to use any methods to abate visible plumes from the cooling towers. The proposed combustion turbine generator will be the General Electric Frame 7EA and heat recovery steam generator which will be operated in combined-cycle mode with an existing Westinghouse steam turbine generator.

#### VISIBLE PLUME MODELING METHODS

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##### PLUME FREQUENCY AND DIMENSION MODELING

The Combustion Stack Visible Plume (CSVP) model was used to estimate plume frequency and plume dimensions for the cooling tower and turbine exhausts. This model provides conservative estimates of both plume frequency and plume size. This model uses both hourly exhaust parameters and ambient condition data to determine the plume frequency. This model is based on the algorithms of the Industrial Source Complex model (Version 2), that determine temperatures at the plume centerline, but this model does not incorporate building downwash.

The modeling method combines the cooling tower exhausts into an equivalent single stack. This method may overestimate cooling tower plume size (particularly height) during plume hours with higher winds due to little cell interaction and the potential for building downwash, but will be more accurate during low wind and calm periods when the exhausts from the cooling tower cells will combine into one coherent body. Wind speeds are set to 1 m/s during calm hours and the surrounding area was modeled as rural.

##### CLOUD COVER DATA ANALYSIS METHOD

A plume frequency of 20 percent of seasonal (in this case November through April) daylight no rain/fog high visual contrast (i.e. "clear") hours is used to determine potential plume impact significance. The high visual contrast hours analysis methodology is provided below:

The Energy Commission has identified a "clear" sky category during which plumes have the greatest potential to cause adverse visual impacts. For this project the

meteorological data set<sup>2</sup> used in the analysis categorizes total sky cover and opaque sky cover in 10 percent increments. Staff has included in the “Clear” category a) all hours with marked “CLR”, plus b) half of the hours marked either “BNK” or “SCT” (for broken or scattered). The rationale for including these two components in this category is as follows: first, plumes typically contrast most with sky under clear conditions and, second, for a substantial portion of the time when total sky cover is relatively low (broken or scattered), clouds do not substantially reduce contrast with plumes. Staff has estimated that approximately half of the hours meeting the latter criteria can be considered high visual contrast hours and are included in the “clear” sky definition.

If it is determined that the seasonal daylight clear hour plume frequency is greater than 20 percent then plume dimensions are determined, and a significance analysis of the plumes is included in the Visual Resources section of this Initial Study.

## COOLING TOWER VISIBLE PLUME MODELING ANALYSIS

### COOLING TOWER DESIGN AND OPERATING PARAMETERS

The following cooling tower design characteristics, presented below in **VISIBLE PLUME Table 1**, were determined through a review of the applicant’s AFC (IID 2006a) and data responses (IID 2006k, Data Response #24). The data presented in **VISIBLE PLUME Table 1** was used to model the cooling tower plume frequency and dimensions.

**VISIBLE PLUME Table 1**  
**Cooling Tower Operating and Exhaust Parameters**

| Parameter           |                             | Cooling Tower Design Parameters |                            |                          |
|---------------------|-----------------------------|---------------------------------|----------------------------|--------------------------|
| Number of Cells     |                             | 4 (1 x 4)                       |                            |                          |
| Cell Height         |                             | 31 feet (9.45 meters)           |                            |                          |
| Cell Stack Diameter |                             | 18 feet (5.49 meters)           |                            |                          |
| Case                | Inlet Air Ambient Condition | Heat Rejection Rate (mmBtu/hr)  | Exhaust Flow Rate (lbs/hr) | Exhaust Temperature (°F) |
| 1                   | 20°F, 90% RH                | 285.757                         | 8,942,000                  | 75.79                    |
| 2                   | 59°F, 60% RH                | 277.818                         | 10,508,000                 | 84.94                    |
| 3                   | 95°F, 26% RH                | 314.254                         | 10,202,000                 | 97.20                    |

Source IID 2006k, Data Response #24

### COOLING TOWER VISIBLE PLUME MODELING ANALYSIS

Staff modeled the cooling tower plumes using the CSVP model. **VISIBLE PLUME Table 2** provides the CSVP model visible plume frequency results using a five-year (1995-1999) meteorological data set, obtained from Imperial County Airport, El Centro.

<sup>2</sup> This analysis uses an Imperial County Airport data set obtained from the National Climatic Data Center.

**VISIBLE PLUME Table 2**  
**Predicted Hours with Cooling Tower Visible Plumes**  
**EI Centro 1995-1999 Meteorological Data**

| <b>Case</b>                             | <b>Available (hr)</b> | <b>Plume (hr)</b> | <b>Percent</b> |
|---|-----------------------|-------------------|----------------|
| All Hours                               | 43,824                | 4,936             | 11%            |
| Daylight Hours                          | 22,217                | 716               | 3%             |
| Daylight No Rain No Fog                 | 21,890                | 611               | 3%             |
| Seasonal Daylight No Rain No Fog*       | 21,890                | 611               | 3%             |
| Seasonal Daylight No Rain No Fog Clear* | 10,968                | 228               | <b>2%</b>      |

\*Seasonal conditions occur anytime from November through April.

For the proposed cooling tower, due to the cooling load being directly related to ambient temperature, the worst case seasonal plume conditions are forecast to occur from November through April.

A plume frequency of 20 percent of seasonal (in this case November through April) daylight clear hours is used as a plume impact study threshold trigger. The plant design, incorporating several conservative operating assumptions indicates that the cooling tower plume frequency will be less than 20 percent of seasonal clear hours.

## **TURBINE EXHAUST VISIBLE PLUME ASSESSMENT**

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The temperature of the turbine exhaust exceeds 300 °F under normal operating conditions. From staff's experience exhaust temperatures of this magnitude are reasonably expected to form no visible steam plumes under the meteorological conditions that exist at the project site. Therefore staff will not analyze the turbine exhaust stack further for potential visible plumes.

## **CONCLUSIONS**

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Visible water vapor plumes from the proposed EI Centro Unit 3 Repower Project cooling tower are not expected to occur greater than 20 percent of seasonal daylight clear hours. Visible water vapor plumes are not expected to form at the proposed EI Centro Unit 3 Repower Project turbine exhaust stacks under the meteorological conditions that exist at the project site.

## **REFERENCES**

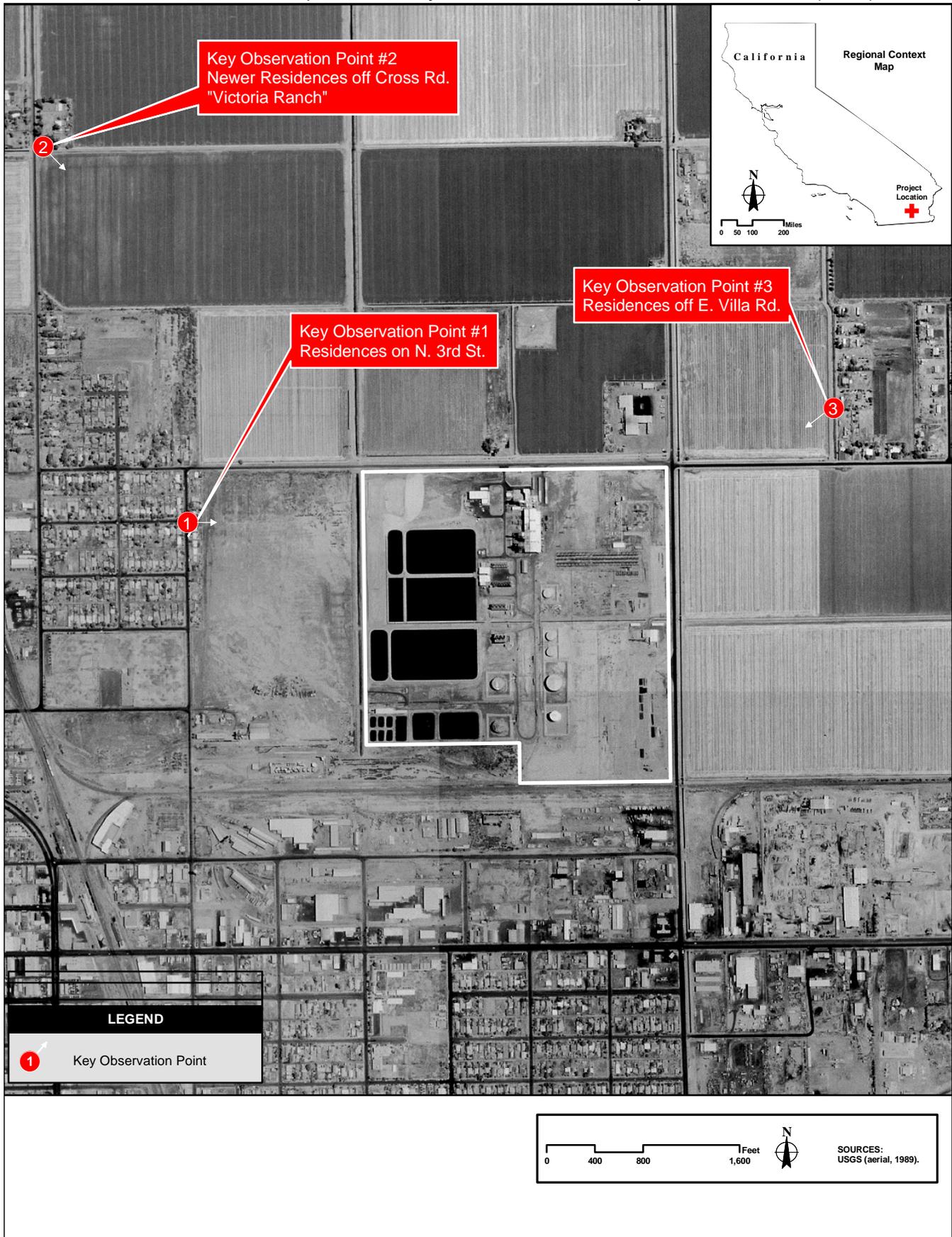
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IID2006a – Imperial Irrigation District/J Federowicz (36971) Submittal of the Application for Small Power Plant Exemption (Volumes 1 and 2) for the EI Centro Unit 3 Repower Project Dated 05/17/06. Submitted to CEC/B.B. Blevins/M Dyas/Dockets on 05/19/06.

IID2006k – Imperial Irrigation District/J Diven (37409) First Round Data Responses Part 1. Dated 07/07/06. Submitted to CEC/Dockets 07/12/06.

# VISUAL RESOURCES - FIGURE 1

SPPE - El Centro Unit 3 Repower - Visually Sensitive Areas and Key Observation Points (KOPs)



CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, SEPTEMBER 2006

SOURCE: SPPE May 2006, Vol. 1, Figure 6.11-3

**VISUAL RESOURCES - FIGURE 2**

SPPE - El Centro Unit 3 Repower - Simulated View from KOP #1: Residences on N. 3rd Street

SEPTEMBER 2006



VISUAL RESOURCES

**VISUAL RESOURCES - FIGURE 3**

SPPE - El Centro Unit 3 Repower - Simulated View from Newer Residences off Cross Road ("Victoria Ranch")

SEPTEMBER 2006



VISUAL RESOURCES

**VISUAL RESOURCES - FIGURE 4**

SPPE - El Centro Unit 3 Repower - Simulated View from KOP #3: Residences off E. Villa Road

SEPTEMBER 2006



VISUAL RESOURCES

# WASTE MANAGEMENT

Ellie Townsend-Hough

## INTRODUCTION

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The purpose of this section is to assess the potential impacts associated with the El Centro Unit 3 Repower 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 Initial Study (IS).

## SETTING

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Imperial Irrigation District (IID or applicant) proposes to replace the existing Unit 3 boiler with a combustion turbine generator (CTG) and heat recovery steam generator (HRSG) to supply steam to the existing Unit 3 steam turbine generator. The proposed replacement will be constructed wholly within the existing El Centro Generating Station (ECGS) located at 485 East Villa Avenue, in El Centro, California (IID 2006a). The proposed project would increase the existing Unit 3 generating capacity by 84 megawatts (MW), from 44 MW to 128 MW.

The El Centro Unit 3 Repower Project includes the removal and/or abandonment in place of existing equipment that may contain hazardous waste. The applicant plans to abandon in place the boiler at Unit 3 and remove two 22,000 gallon fuel oil above-ground-storage tanks (ASTs) and oil transfer pumps. The Unit 3 boiler contains asbestos and lead based paint. The Phase I Environmental Site Assessment (ESA) found three recognized environmental conditions (RECs). There were releases from the fuel tanks and the former and current mercury-containing manometers for Boilers 1, 2 and 3 that were located on the project site.

Both non-hazardous and hazardous wastes would be generated during all phases of the facility's permitted existence as described below.

## IMPACTS

### ENVIRONMENTAL CHECKLIST

|  | 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?  |                                | Pending Phase II ESA<br><br>Unknown                |                              |           |
| 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 one-quarter 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 ESA for the El Centro Unit 3 Repower Project. The ESA, by URS, Inc. determined that the property showed evidence of three RECs, therefore the applicant is performing a Phase II ESA. The releases are from two 22,000-gallon fuel above-ground fuel storage tanks and former mercury-containing manometers associated with three boilers on the El Centro power plant site (IID 2006a).

Staff submitted data requests regarding Waste Management (30 through 32) June 16, 2006. Applicant expects to complete the Phase II ESA sampling during August and plans to respond to the data requests by the end of September 2006 (IID2006j). The data requests will provide more detail and certainty about the quantity and extent of soil contamination and necessary remediation. Once that is known, and it is determined that a licensed clean-up contractor and hauler would cleanup and dispose of waste in a licensed facility, staff would expect less than significant impacts.

**Construction**

Site preparation and construction of the proposed generating plant would generate both nonhazardous and hazardous wastes in solid and liquid forms as described below.

***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 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 absorbents, 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 El Centro Unit 3 Repower Project would generate both nonhazardous and hazardous wastes in solid and liquid forms under normal operating conditions as described below.

#### ***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 (IID 2006a).

### **B. Handle hazardous waste within one-quarter mile of an existing or proposed school: No Impact**

The closest school is approximately 0.8-mile from the proposed project (IID 2006a page 6.2-6). Therefore, there is no impact under this criterion.

### **C. Located on a hazardous waste site: No Impact**

The proposed project site is not located on any list of hazardous materials sites compiled pursuant to Government Code section 65962.5. Therefore, there is no impact under this criterion.

### **D. Served by a landfill with sufficient capacity: Less Than Significant Impact**

Project operation would generate approximately 10 cubic yards per month of nonhazardous solid wastes, which is 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 would slightly reduce the available capacity of both the Allied Imperial Landfill and the La Paz County Landfill, the identified disposal facilities, but would not significantly affect either their daily capacity or anticipated remaining lifetime. Allied Imperial is a Class III landfill and has a remaining capacity of 2.417

million cubic yards. La Paz is a Class II, which has a remaining capacity of 24.8 million cubic yards (IID 2006 page 6.14-6). Thus, this impact would 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.). 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 insignificant impacts on individual recycling and disposal facilities, and the availability of regional landfills, cumulative impacts would be less than significant for both hazardous and nonhazardous wastes.

## **CONCLUSIONS**

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Staff is waiting to receive data responses to outstanding data requests and the results of the Phase II ESA. When that data is received, staff will be able to determine if the project could result in any significant adverse impacts, and make recommendations for appropriate mitigation at that time.

## **PROPOSED CONDITIONS OF EXEMPTION**

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Staff proposes no Conditions of Exemption at this time. Depending on the results of the Phase II ESA and other pending data, staff may propose one or more Conditions of Exemption in the Final Initial Study.

## **REFERENCES**

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- IID2006a – Imperial Irrigation District/J Federowicz (36971) Submittal of the Application for Small Power Plant Exemption (Volumes 1 and 2) for the El Centro Unit 3 Repower Project Dated 5/17/06. Submitted to CEC/B.B. Blevins/M Dyas/Dockets on 05/19/06.
- IID2006j – Imperial Irrigation District/A Thompson (37259) Applicant's Response to Staff Data Requests Submitted to CEC/Dockets 07/06/06.

# GENERAL CONDITIONS OF EXEMPTION

Steve Munro

## INTRODUCTION

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The El Centro Unit 3 Repower Project Compliance Plan has been established as required by Section 25532 of the Public Resources Code. The plan provides a means for assuring that the facility is constructed and operated in compliance with air and water quality, public health and safety, other applicable laws, ordinances, regulations and standards, and conditions of exemption.

The Compliance Plan is divided into two sections:

1. Compliance general conditions of exemption which specify the framework for record keeping and reporting throughout the construction and operation phases of the project; and,
2. Conditions of exemption which contain measures that must be taken to mitigate any and all potential adverse project impacts to an insignificant level.

The compliance general conditions are presented first. The conditions of exemption follow and are organized by technical area.

Each condition of exemption has a verification statement describing the means by which compliance with the condition can be verified. The verification procedures may be modified by the Energy Commission Compliance Project Manager (CPM) as necessary to ensure compliance with the adopted conditions of exemption. Verification of compliance with the conditions will also be accomplished by periodic reports filed by the project owner, the Imperial Irrigation District (IID) as required by the general conditions, auditing of project records, and by staff inspections of the power plant site and related facilities.

## GENERAL CONDITIONS OF EXEMPTION DEFINITIONS

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To ensure consistency, continuity and efficiency, the following terms, as defined, apply to all technical areas, including Conditions of Certification:

### **SITE MOBILIZATION:**

Site mobilization includes moving trailers and related equipment onto the site, usually accompanied by minor ground disturbance, grading for the trailers and limited vehicle parking, trenching for utilities, installing utilities, grading for an access corridor, and other related activities. Ground disturbance, grading, etc. for site mobilization are limited to the portion of the site necessary for placing the trailers and providing access and parking for the occupants. Site mobilization is for temporary facilities and is therefore not considered construction.

## **GROUND DISTURBANCE:**

Ground disturbance consists of onsite activity that results in the removal of soil or vegetation, boring, trenching or alteration of the site surface. This does not include driving or parking a passenger vehicle, pickup truck, or other light vehicle, or walking on the site.

## **GRADING:**

Grading consists of onsite activity conducted with earth-moving equipment that results in alteration of the topographical features of the site such as leveling, removal of hills or high spots, or moving of soil from one area to another.

## **CONSTRUCTION:**

[From section 25105 of the Warren-Alquist Act.] Construction is defined as onsite work to install permanent equipment or structures for any facility. Construction does **not** include the following:

- a. The installation of environmental monitoring equipment.
- b. A soil or geological investigation.
- c. A topographical survey.
- d. Any other study or investigation to determine the environmental acceptability or feasibility of the use of the site for any particular facility.
- e. Any work to provide access to the site for any of the purposes specified in a., b., c., or d.

## **COMPLIANCE PROJECT MANAGER RESPONSIBILITIES**

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A Compliance Project Manager (CPM) will be designated to oversee compliance with the general compliance conditions and conditions of exemption. The assigned CPM, after consultation with the appropriate technical staff, and approval of Energy Commission management and responsible agencies, shall:

1. Ensure that compliance files are established and maintained for the El Centro Unit 3 Repower Project;
2. Track compliance filings;
3. Ensure the timely processing of proposed changes to the Energy Commission Decision;
4. Use all available means to encourage the resolution of disputes; and,
5. Coordinate compliance monitoring activities of Energy Commission and delegate agency staff.

## **PROJECT OWNER RESPONSIBILITY**

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It shall be the responsibility of the project's owners and operators to ensure that the compliance general conditions and all conditions of exemption are satisfied. IID must comply with the conditions of exemption and compliance general conditions. Failure to comply with any of the conditions of exemption or the compliance general conditions may result in reopening of the case and revocation of the SPPE, or other action as appropriate.

IID shall send all verification submittals to the CPM whether such condition was satisfied or work performed by IID or other agent, and whether or not such verification was also submitted to the CPM by an agent.

## **COMPLIANCE RECORD**

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IID shall maintain, for the life of the project, files of all condition of exemption and compliance general condition-related correspondence, and final as-built drawings.

The Energy Commission shall maintain as a public record:

1. All documents received regarding compliance with the compliance general conditions and conditions of exemption;
2. All complaints filed with the Energy Commission; and,
3. All petitions for changes to conditions and documentation of the resulting staff or Energy Commission action taken.

## **COMPLIANCE SUBMITTALS**

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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:

**Steve Munro, Compliance Project Manager**  
**California Energy Commission**  
**1516 Ninth Street, MS-2000**  
**Sacramento, CA 95814**

## **CONSTRUCTION COMPLIANCE REPORTS**

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The project owner must submit construction compliance reports to assist the CPM in tracking activities and monitoring compliance with the terms and conditions of the Energy Commission Decision. During construction, the project owner or authorized agent will submit Monthly Compliance Reports. These reports, and the requirement for an accompanying compliance matrix, are described below.

## COMPLIANCE MATRIX

A compliance matrix shall be submitted by the project owner to the CPM along with each monthly compliance report. The compliance matrix is intended to provide the CPM with the current status of all compliance conditions in a spreadsheet format. The compliance matrix must identify:

1. the technical area,
2. the condition of exemption number,
3. a brief description of the verification action or submittal required by the condition,
4. the date the submittal is required (e.g., 60 days prior to construction, after final inspection, etc.),
5. the expected or actual submittal date,
6. the date a submittal or action was approved by the Chief Building Official (CBO), CPM, or delegate agency, if applicable, and
7. the compliance status for each condition of exemption (e.g., “not started”, “in progress” or “completed date”).

Completed or satisfied conditions of exemption do not need to be included in the compliance matrix after they have been identified as completed/satisfied in at least one monthly compliance report.

## PRE-CONSTRUCTION MATRIX

Prior to commencing construction a compliance matrix addressing only those conditions of exemption, if any, that must be fulfilled before the start of construction shall be submitted by the project owner to the CPM. This matrix will be included with the project owner's **first** compliance submittal. It will be in the same format as the compliance matrix referenced above.

## TASKS PRIOR TO START OF CONSTRUCTION

Construction shall not commence until the pre-construction matrix is submitted, all pre-construction conditions of exemption, if any, have been complied with, and the CPM has issued a letter to the project owner authorizing construction. Project owners frequently anticipate starting project construction as soon as the project is exempted. In some cases it may be necessary for the project owner to file submittals prior to exemption if the required lead-time for a required compliance event extends beyond the date anticipated for start of construction. It is also important that the project owner understand that pre-construction activities that are initiated prior to exemption are performed at the owner's own risk. Failure to allow specified lead-time may cause delays in start of construction.

Various lead times for verification submittals to the CPM for conditions of exemption are established to allow sufficient staff time to review and comment, and if necessary, allow

the project owner to revise the submittal in a timely manner. This will ensure that project construction may proceed according to schedule.

The first construction Monthly Compliance Report is due the month following the Energy Commission business meeting date on which the project was approved, unless otherwise agreed to by the CPM. The first Monthly Compliance Report shall include an initial list of dates for each of the events identified on the Key Events List. The Key Events List is found at the end of this section.

During pre-construction and construction of the project, the project owner or authorized agent shall submit an original and five copies of the Monthly Compliance Report within 10 working days after the end of each reporting month. Monthly Compliance Reports shall be clearly identified for the month being reported. The reports shall contain at a minimum:

1. a summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule;
2. documents required by specific conditions to be submitted along with the Monthly Compliance Report. Each of these items must be identified in the transmittal letter, and should be submitted as attachments to the Monthly Compliance Report;
3. an initial, and thereafter updated, compliance matrix which shows the status of all conditions of exemption (fully satisfied and/or closed conditions do not need to be included in the matrix after they have been reported as closed);
4. a list of conditions which have been satisfied during the reporting period, and a description or reference to the actions which satisfied the condition;
5. a list of any submittal deadlines that were missed accompanied by an explanation and an estimate of when the information will be provided;
6. a cumulative listing of any approved changes to conditions of certification;
7. a listing of any filings with, or permits issued by, other governmental agencies during the month;
8. a projection of project compliance activities scheduled during the next two months. The project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance with conditions of exemption;
9. a listing of the month's additions to the on-site compliance file;
10. any requests to dispose of items that are required to be maintained in the project owner's compliance file; and

11. a listing of complaints, notices of violation, official warnings, and citations received during the month; a description of the resolution of any complaints which have been resolved, and the status of any unresolved complaints.

## **CONFIDENTIAL INFORMATION**

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Any information which IID deems proprietary shall be submitted to the Energy Commission Docket Unit (Mail Stop 4) to be processed pursuant to California Code of Regulations Title 20 section 2505(a). Any information which is determined to be confidential shall be kept confidential as provided for in CCR Title 20 section 2501 et seq. Information deemed not to be confidential will become public information.

## **ACCESS TO THE FACILITY**

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The CPM, or other designated Energy Commission staff or agent, shall be guaranteed and granted access at any time to the project site, transmission line right-of-way, and related sites to conduct audits, inspections, surveys, or general site visits.

## **POST CERTIFICATION CHANGES TO THE ENERGY COMMISSION DECISION**

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For the life of the project, IID must provide written notification to the CPM when planning changes to the project description. When a proposed change affects the conditions of exemption, IID must file a petition for the change with the CPM. The petition must contain the following information:

1. A complete description of the proposed modification(s), including proposed new language for the condition(s) of exemption that will be affected;
2. A discussion of the necessity for the proposed modification(s), including an explanation of why the modification was not considered during the original exemption proceeding for the project, and an explanation of the new information that has made the proposed modification necessary;
3. An analysis of the potential impacts the modification may have on the environment and the proposed measures to mitigate all potential impacts to a level of insignificance; and
4. A list of the property owners potentially affected by the proposed modifications.

The CPM will review petition filings and may authorize those petitions where there is no possibility that the modification(s) will result in a significant effect on the environment, or cause the project not to comply with any applicable laws, ordinances, regulations, or standards. Full Commission approval will be required for petitions that do not meet the above criteria.

#### A. Ownership or Operator Changes

The project owner must notify the CPM in writing of any changes in ownership including identification of the new owner [contact person, address, phone number], any changes in the operational relationship between the owner and the operator, and a statement signed by the new owner that the new owner understands the Compliance Plan and the Conditions of Exemption, and agrees to abide by those duties and obligations as described and intended by the conditions of exemption.

The project owner of record must provide to the CPM notice of any change in project ownership, as described above, for the life of the project.

# KEY EVENT LIST

PROJECT: EL CENTRO UNIT 3 REPOWER PROJECT

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DOCKET #: **06-SPPE-2C**

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COMPLIANCE PROJECT MANAGER: Steve Munro

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| EVENT DESCRIPTION                       | DATE |
|---|------|
| Certification Date                      |      |
| Online Date                             |      |
| <b>POWER PLANT SITE ACTIVITIES</b>      |      |
| Start Site Mobilization                 |      |
| Start Ground Disturbance                |      |
| Start Rough Grading                     |      |
| Start Construction                      |      |
| First Combustion of Gas Turbine         |      |
| Start Commercial Operation              |      |
| Complete All Construction               |      |
| <b>TRANSMISSION LINE ACTIVITIES</b>     |      |
| Start T/L Construction                  |      |
| SYNCHRONIZATION WITH GRID               |      |
| COMPLETE T/L CONSTRUCTION               |      |
| <b>FUEL SUPPLY LINE ACTIVITIES</b>      |      |
| Start Fuel Supply Line Construction     |      |
| COMPLETE FUEL SUPPLY LINE CONSTRUCTION  |      |
| <b>WATER SUPPLY LINE ACTIVITIES</b>     |      |
| START WATER SUPPLY LINE CONSTRUCTION    |      |
| COMPLETE WATER SUPPLY LINE CONSTRUCTION |      |

# EL CENTRO UNIT 3 REPOWER PROJECT PREPARATION TEAM

|   |                      |
|---|----------------------|
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| STAFF COUNSEL                             | KERRY WILLIS         |
| PROJECT ASSISTANT                         | DORA GOMEZ           |
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| BIOLOGICAL RESOURCES                      | MISA WARD            |
| COMPLIANCE                                | STEVE MUNRO          |
| CULTURAL RESOURCES                        | BEVERLY BASTIAN      |
| ENERGY RESOURCES                          | GEOFF LESH           |
| GEOLOGY, MINERAL RESOURCES & PALEONTOLOGY | DAL HUNTER           |
| HAZARDOUS MATERIALS                       | SHAHAB KHOSHMAHRAB   |
| LAND USE & AGRICULTURE                    | AMANDA STENNICK      |
| NOISE & VIBRATION                         | STEVE BAKER          |
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| TRANSMISSION LINE SAFETY & NUISANCE       | OBED ODOEMELAM       |
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| VISUAL RESOURCES                          | GARY COLLORD         |
| WASTE MANAGEMENT                          | ELLIE TOWNSEND-HOUGH |

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE  
STATE OF CALIFORNIA

APPLICATION FOR A SMALL POWER  
PLANT EXEMPTION  
FOR THE EL CENTRO UNIT 3  
REPOWER PROJECT

Docket No. 06-SPPE-02  
PROOF OF SERVICE

\*Established 6/29/06

CALIFORNIA ENERGY COMMISSION  
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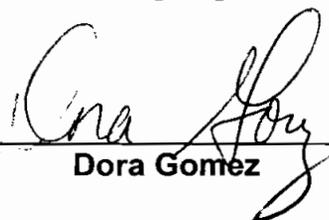
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**DECLARATION OF SERVICE**

I, Dora Gomez, declare that on September 22, 2006, I deposited copies of the attached  
EI CENTRO UNIT 3 REPOWER PROJECT DRAFT INITIAL STUDY (6-SPPE2)

I Dora Gomez; declare under penalty of perjury that the foregoing is true and correct.

  
\_\_\_\_\_  
Dora Gomez