CALIFORNIA
ENERGY
COMMISSION

VALERO COGENERATION PROJECT

Application For Certfication (01-AFC-05)
Benicia, California

PRESIDING MEMBER'S
PROPOSED DECISION

AUGUST 2001
P800-01-021

Gray Davis, Governor

TABLE OF CONTENTS – HOME PAGE

Page

EXECUTIVE SUMMARY - RECOMMENDATION 2

READER'S GUIDE 5

SUMMARY MATRIX– Environmental Impacts.....7

LORS MATRIX –Transmission & Engineering 11

PROJECT DESCRIPTION.....13

ENVIRONMENTAL QUALITY
- Air Quality 19
- Biology 57
- Cultural Resources.....61
- Geology 71
- Hazardous Materials.....83
- Land Use 89
- Noise.....95
- Public Health.....103
- Socioeconomics 107
- Traffic & Transportation.....115
- Visual Resources.....127
- Waste Management 139
- Water Quality & Soils 147
- Water Resources 155
- Alternatives 161

TRANSMISSION & ENGINEERING
- Efficiency.....167
- Facility Design 171
- Reliability….. 193
- Transmission Line Safety & Nuisance 197
- Transmission System Engineering.....201
- Worker Safety 207

COMPLIANCE. 215

ADOPTION ORDER. 233

This page intentionally blank.

EXECUTIVE SUMMARY – *RECOMMENDATION*:

APPROVED

WITH CONDITIONS

The Energy Commission Committee, Commissioner Arthur Rosenfeld, Presiding, and Commissioner Robert Laurie, recommend approval of the Valero Refining Company's proposed 102 megawatt (MW) cogeneration project in Benicia, California, together with the following highlighted measures to mitigate potential environmental and community impacts:

ENERGY RESOURCES:

- V The cogeneration project will effectively take the Valero Refinery "off the grid" providing energy independence and reliability for the refinery and freeing capacity for other electricity users.
- V The cogeneration project will use refinery fuel gas produced by refinery processes, thus freeing natural gas for other users.
- V The cogeneration project will produce steam for refinery processes, retiring as many as three existing older boilers.

AIR QUALITY:

- V The power plant will use state-of-the-art Best Available Control Technology to minimize emissions.
- V Complete offsets, mostly provided from refinery operations, will be used to compensate for any pollutant for which the Bay Area is non-attainment.

WATER RESOURCES:

- V Valero will convert the cogeneration project to reclaimed wastewater and/or reduce overall refinery water consumption at the refinery to offset the project's use of fresh water supplies from the City of Benicia.

LAND USE:

- V Use of the existing Valero Benicia refinery site, plus its existing transmission lines, will keep the cogeneration project in an already industrial area.

VISUAL:

- V Structures will be painted in colors compatible with the refinery.
- V Shields on plant lighting will minimize nighttime glare.

Dated: August 30, 2001

ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION

ARTHUR H. ROSENFELD
Commissioner and Presiding Member
Valero AFC Committee

ROBERT A. LAURIE
Commissioner and Associate Member
Valero AFC Committee

TABLE OF CONTENTS

This page intentionally blank.

READER'S GUIDE

Order of Presentation

This Proposed Decision is designed as an electronic presentation, not as a traditional print document. It is constructed as a web of information, differing in subject matter and level of detail. *(The CD and Web versions are internally linked.)*

For navigating through the Proposed Decision, its web looks like this:

1. **TABLE OF CONTENTS:**
   Lists the topics in the Decision, providing electronic links and printed page numbers.

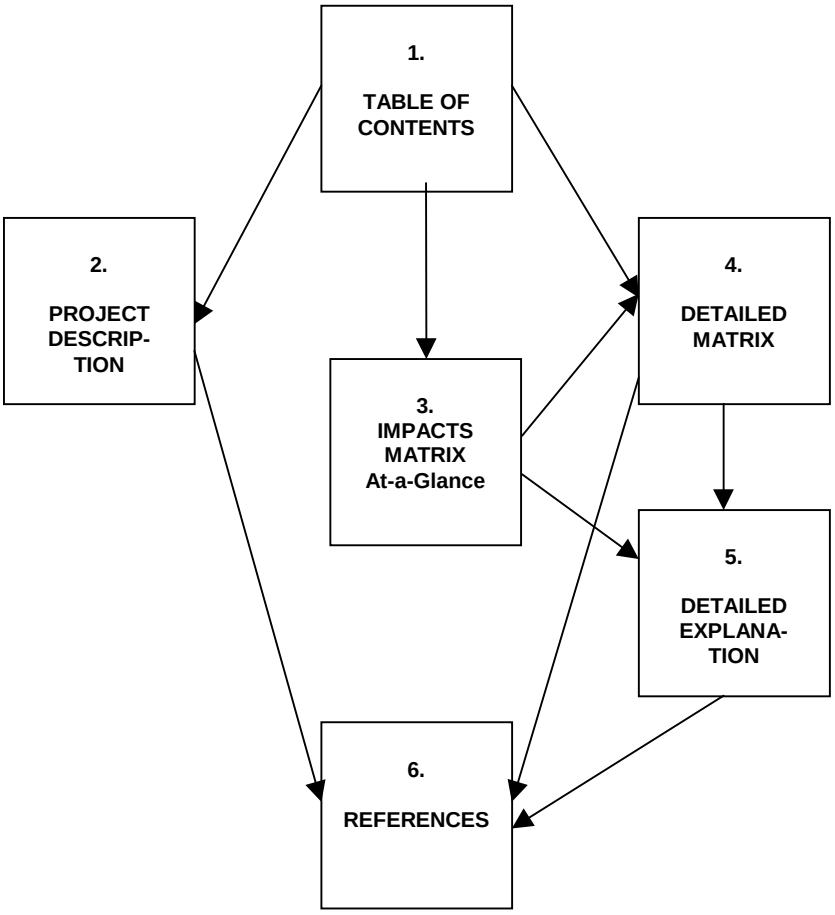
2. **PROJECT DESCRIPTION:**
   Describes all features of the project and its related facilities, plus the surrounding community and environmental setting.

3. **IMPACTS MATRIX At-a-Glance:**
   For each environmental topic, indicates whether the Decision found a potential significant environmental impact requiring mitigation. For engineering topics, indicates compliance with applicable laws.

4. **DETAILED MATRIX:**
   Provides an explanation of potential adverse environmental impacts, the mitigation necessary to reduce or eliminate the impacts, and references to the Decision's Conditions of Certification and the supporting documentation in the Application for Certification (AFC) and Staff Assessment (SA).

5. **DETAILED TEXT:**
   Explains in greater detail any potential impacts and their mitigation, provides the full text of all Conditions of Certification, and references to the Decision's Conditions of Certification and the supporting documentation in the Application for Certification and Staff Assessment.

6. **REFERENCES:**
   Provides references to the Application for Certification and the Staff Assessment.



Legend: & Detailed Matrices

The Impacts At-a-Glance and Detailed Matrices combine a traditional California Environmental Quality Act (CEQA) review of the project's potential to have significant environmental impacts with an engineering and safety review. This Matrix format assures the review of an array of potential environmental impacts taken from the CEQA Checklist and supplemented with topics that have arisen during the Commission's 25 years of power plant review experience. Fifteen environmental topics and numerous sub-topics are evaluated for the project, its linear pipeline facilities, the surrounding setting, and cumulative impacts.

In the Impacts At-a-Glance Matrix, the Energy Commission recaps its detailed analyses found in the Detailed Matrix for both construction and operation of the proposed power plant and its associated pipelines and transmission lines. Whether there is a potential environmental impact and its significance level will be displayed in each Matrix in accordance with the following Legend:

None	Impact does not apply to the project. [Blue]
Insignificant	Potential impact is not significant. [Green]
MITIGATION	Impact is potentially significant but can be eliminated or reduced to insignificance by mitigation. [Yellow]
SIGNIFICANT	Impact is potentially significant, cannot feasibly be mitigated, and cannot be eliminated or reduced to insignificance by mitigation or a project alternative. [Red]
CONDITION	A Condition of Certification is required to assure compliance with applicable laws, ordinances, regulations, or standards (LORS). [Yellow]

ENVIRONMENTAL IMPACTS - At-a-Glance

AIR QUALITY	*POWER PLANT SITE*	*CUMULATIVE IMPACTS*	*LORS COMPLIANCE*
Construction Equipment	**MITIGATION**	**None**	**YES**
Construction Dust	**MITIGATION**	**None**	**YES**
Federal & California Air Quality Standards			
Á **Ozone (O3)**	**MITIGATION**	**None**	**YES**
Á **Nitrogen Dioxide (NO2; also generically known as NOx)**	**MITIGATION**	**None**	**YES**
Á **Carbon Monoxide (CO)**	**MITIGATION**	**None**	**YES**
Á **Particulate Matter 10 Microns (PM 10)**	**MITIGATION**	**None**	**YES**
Á **Sulfur Dioxide (SO2)**	**MITIGATION**	**None**	**Yes**
Á **Presursor Organic Compounds (POC)**	**MITIGATION**	**None**	**YES**
Commissioning & Startup	**Insignificant**	**None**	**YES**
Cooling Towers	**MITIGATION**	**None**	**YES**

BIOLOGY	*POWER PLANT SITE*	*CUMULATIVE IMPACTS*	*LORS COMPLIANCE*
Protected Species Impact	None	None	YES
Long-term Habitat Loss/ Degradation	None	None	YES
Short-term Construction Disturbance	None	None	YES
Operation Impact	None	None	YES
CULTURAL RESOURCES			
Prehistory: Historical: Ethnic Heritage:	MITIGATION	None	YES
GEOLOGY			
Earthquake:	MITIGATION	None	YES
Instability:	MITIGATION	None	YES
Mineral Resources:	None	None	YES
Fossils: (Paleontology)	MITIGATION	None	YES
Flood:	None	None	YES
HAZARDOUS MATERIALS			
Transportation:	MITIGATION	None	YES
Storage & Use:	MITIGATION	None	YES
Disposal:	None	None	YES
LAND USE			
General/Special Plans:	None	None	YES
Zoning:	None	None	YES
Open Space:	None	None	YES
Existing/ Planned Uses:	None	None	YES

NOISE	*POWER PLANT SITE*	*CUMULATIVE IMPACTS*	*LORS COMPLIANCE*
Loudness/ Time of Day:	**MITIGATION**	**None**	**YES**
Vibration:	**None**	**None**	**YES**
PUBLIC HEALTH			
Construction Health Risks:	**MITIGATION**	**None**	**YES**
Cancer Risks:	**Insignificant**	**None**	**YES**
Non-Cancer Risks:	**Insignificant**	**None**	**YES**
SOCIO-ECONOMICS			
Employment:	**None**	**None**	**YES**
Housing:	**None**	**None**	**YES**
Schools:	**None**	**None**	**YES**
Utility/Public Services:	**None**	**None**	**YES**
Economy/ Government Finance	**None**	**None**	**YES**
Environmental Justice:	**None**	**None**	**YES**
TRAFFIC & TRANSPORTA-TION			
Congestion	**MITIGATION**	**None**	**YES**
Safety	**MITIGATION**	**None**	**YES**
Parking	**MITIGATION**	**None**	**YES**
VISUAL RESOURCES			
Objectionable Appearance:	**MITIGATION**	**None**	**YES**
View Blockage:	**None**	**None**	**YES**
Scenic Designation:	**None**	**None**	**YES**
Lighting:	**MITIGATION**	**None**	**YES**
Visible Plume:	**Insignificant**	**Insignificant**	**YES**

WASTE MANAGEMENT	*POWER PLANT SITE*	*CUMULATIVE IMPACTS*	*LORS COMPLIANCE*
Excavation:	MITIGATION	None	YES
Construction Wastes:	MITIGATION	None	YES
Non-hazardous Wastes	Insignificant	None	YES
Hazardous Wastes:	MITIGATION	None	YES
Disposal Capacity:	None	None	YES
WATER QUALITY & SOIL			
Erosion & Sedimentation:	MITIGATION	None	YES
Prior Soil/Water Contamination:	MITIGATION	None	YES
Drainage & Water Pollution:	MITITGATION	None	YES
Wastewater	MITIGATION	None	YES
WATER RESOURCES			
Water Supply Policy:	MITIGATION	MITIGATION	YES
ALTERNATIVES			
Alternative Sites:	THE PRE-EXISTING POWER PLANT SITE IS PREFERABLE TO ANY ALTERNATIVE		
Alternative Design:	NO ALTERNATIVE DESIGN IS PREFERABLE		
Alternative Technology:	NO ALTERNATIVE TECHNOLOGY IS PREFERABLE & FEASIBLE		
"No Project" Alternative:	THE “NO PROJECT” ALTERNATIVE IS INFERIOR TO PROPOSED PROJECT		

LORS MATRIX - TRANSMISSION & ENGINEERING	
Local/Regional Energy Supplies:	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
Energy Consumption Rate:	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
Engineering - General:	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
Engineering Geology:	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
Structural Engineering:	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
Mechanical Engineering	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
Electrical Engineering:	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
RELIABILITY	
Plant Availability:	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
Maintainability:	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
Fuel Availability:	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
Water Availability:	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
Natural Disasters:	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
TRANSMISSION LINE SAFETY & NUISANCE	
Electric & Magnetic Fields:	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
Aviation Safety:	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
Radio & TV Interference:	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
Audible Noise:	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
Fire Hazard:	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
Shocks:	COMPLIES WITH APPLICABLE LAWS & REGULATIONS

TRANSMISSION SYSTEM ENGINEERING	
Grid Planning:	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS**
Operating Reliability & Safety:	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS**
WORKER SAFETY	
Fire Protection:	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS**
Safety & Injury Prevention:	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS**
Noise	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS**

PROJECT DESCRIPTION

- ***PROJECT NAME:*** Valero Cogeneration Project

- ***PROJECT OWNER:*** Valero Refining Company - California (Valero)

- ***PROJECT OBJECTIVES:*** *(per Project Owner)*

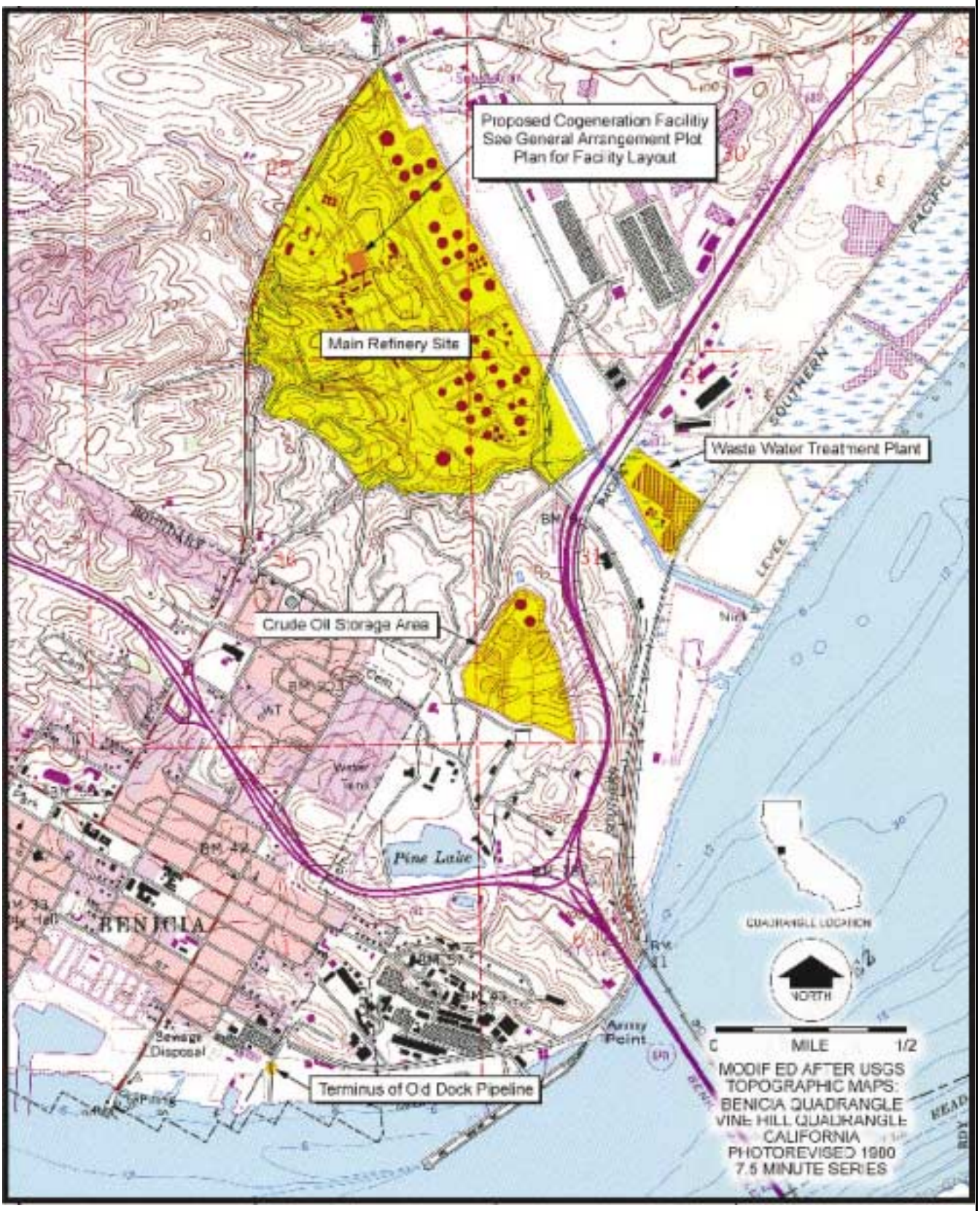
  1. To provide the Valero Refinery with a reliable source of electrical energy and steam;
  2. To minimize environmental and other impacts from the project by locating on or near the existing Valero Refinery plant and making use of the existing infrastructure to the extent possible, including transmission line interconnections, supplies of process water and fuel supplies; and
  3. To increase electrical generation capacity available to meet peak demand in California.

- ***FUTURE PROJECT/SITE DEVELOPMENT:*** None proposed. The power plant proposal constitutes the whole of the project.

- ***PROJECT LOCATION:***

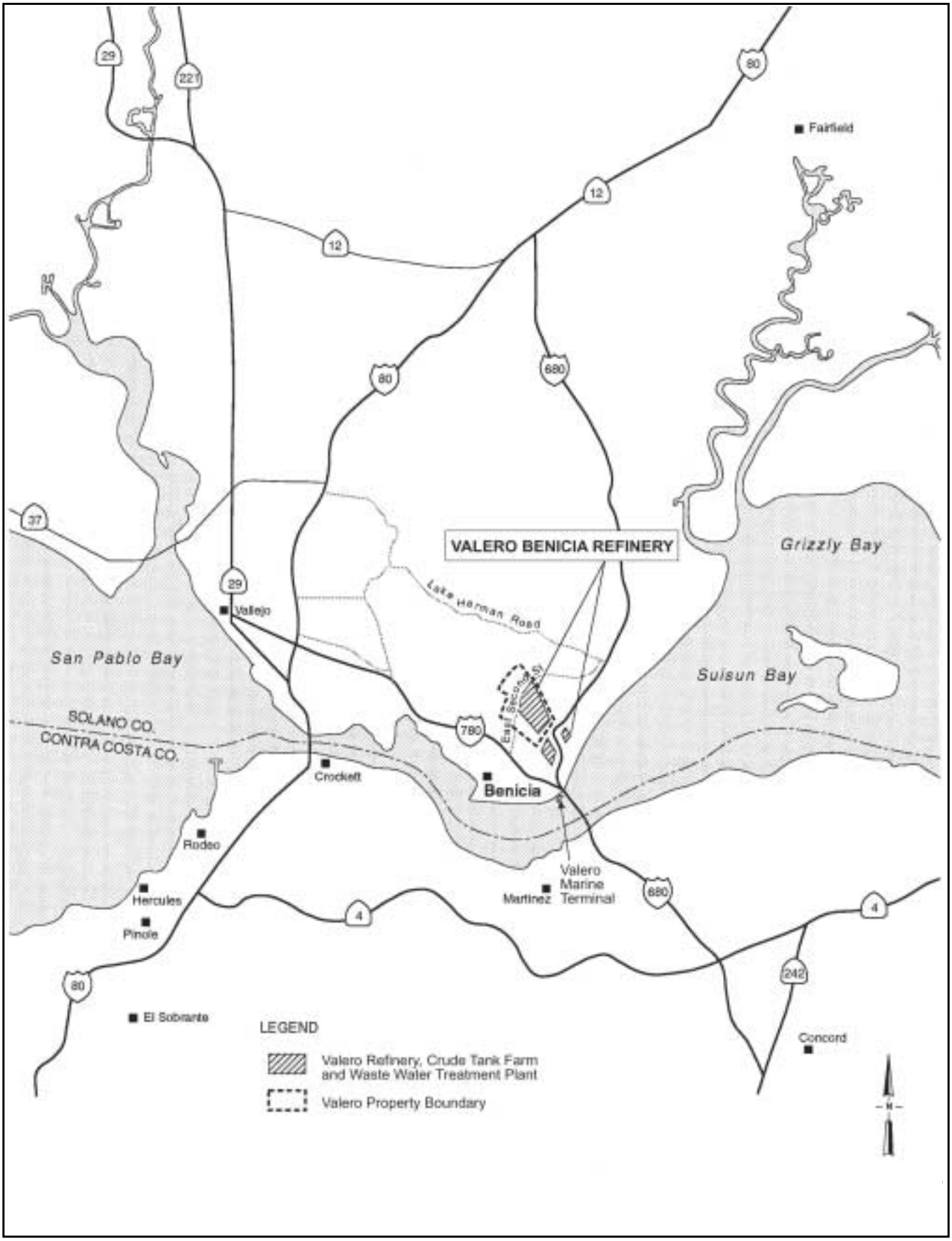
  - Location: 3400 East Second Street, Benicia, California
  - Local Jurisdiction: City of Benicia
  - Zoning: General Industrial (IG)
  - Other Special Designation: None
  - Air Quality Jurisdiction: Bay Area Air Quality Management District (BAAQMD)
  - Seismic Zone:, Zone 4
  - Vehicular & Rail Access: Regional and interregional vehicular access for the project area is provided by a system of freeways (Interstate - 680 & Interstate - 780), highways and local arterials. Union Pacific operates active main line and spur tracks in the project vicinity with direct rail access to the project plant site
  - Site Setting: The proposed facility will be located entirely within the existing Valero Benicia Refinery. The project site consists of a total of 2 acres. All electric transmission and pipelines are located within the refinery complex and are underground. The area can be best described as an industrial region, commonly known as the Benicia Industrial Park, with other industrial uses. The nearest residential area is at the top of a ridge west of the refinery.
  - Alternative Locations Considered: No alternative off-refinery site could meet the project objective of providing process steam and have fewer environmental and community impacts.

Project Description - Figure 1
Valero Cogeneration Project - Local Setting



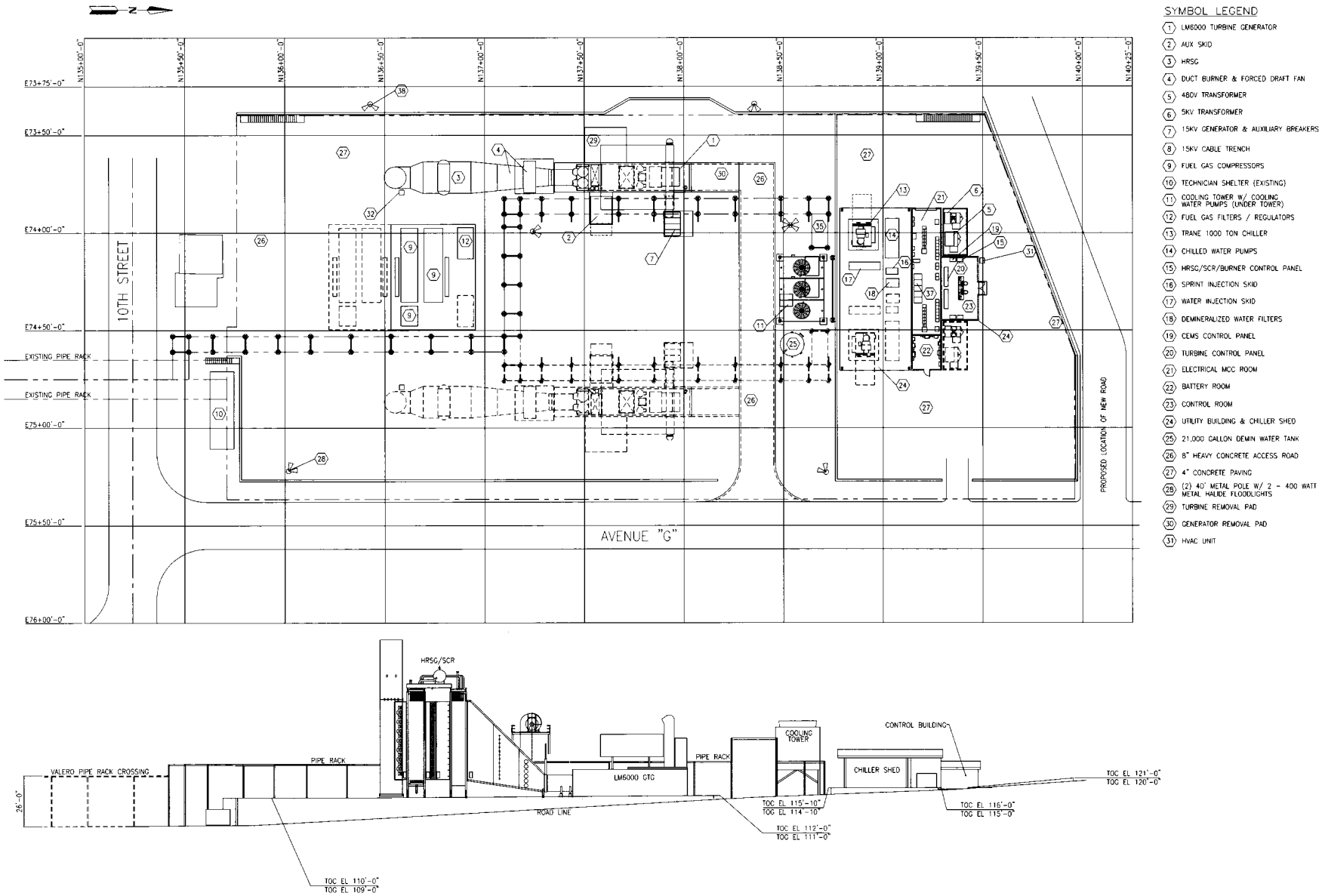
CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2001
SOURCE: PROJECT DESCRIPTION AFC 1.1-3

Project Description - Figure 2
Valero Cogeneration Project - Local Setting



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2001
SOURCE: PROJECT DESCRIPTION AFC - FIGURE 1.1-1

Project Description - Figure 3
Valero Cogeneration Project - Local Setting



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2001
SOURCE: PROJECT DESRICTION AFC

- ***PROJECT DESIGN:***

- Type: Cogeneration; project steam is to be used in refinery processes; electric generation is to fully support refinery operations, with excess generation sold to the grid and, as needed, power will be taken from the grid.

- Fuel/Backup Fuel: Refinery Fuel Gas/Natural Gas

- Output: Phase I: 51 MW, Phase II: 51 MW

- Combustion Turbines: One per phase
- Manufacturer: GE
- Model/Type: LM 6000 PC Sprints (Aero-derived combustion turbine)
- Maximum Rated Output: Each gas turbine-generator will generate 51 MW of gross generation under ISO load conditions.
- Emission Controls:
  - NOx: Low-NOx Burner with water injection/SCR will control NOx emission to 2.5 parts per million (ppm).
  - SOx: Sulfur-limited refinery fuel gas
  - PM_{10}: Sulfur-limited refinery fuel gas

- Heat Recovery Steam Generator: The HRSGs will produce superheated steam at 600 pounds per square inch (psi) for use in the refinery's processes and will result in the shutdown of at least three existing package boilers at the refinery. Although the HRSGs will be equipped with duct burners, these burners are forecast to be a minimum firing or shut sown under normal conditions. Duct firing for additional steam production will be required when other refinery boiler production is limited due to maintenance activities or during refinery upset conditions that call for additional steam.

- Cooling Water: Approximately 314 acre feet of raw water will be provided by the City of Benicia, which represents approximately 5.6 percent of total water provided to the refinery. Valero will substitute recycled waste water and/or water use reductions facility-wide in the amount used by the cogeneration facility. The project includes a three (3) cell cooling tower. .

- Hazardous Materials On-site: The following are anticipated hazardous materials that will be on-site for purposes of operation: aqueous ammonia, sulfuric acid, sodium hyprochlorite, aluminum sulfate, soda ash, sodium hydroxide, magnesium oxide, polymers, optisperse, steamate, aqumax, inhibitor, hydrogen, diesel fuel, gasoline, lube oil, mineral oil.

- Wastes & Disposal: Wastes typical of power generation operation including oily rags, broken and rusted metal and machine parts, defective or broken electrical materials, empty containers and other miscellaneous solid wastes including typical refuse will be disposed of in accordance with applicable laws and regulations.

- Tallest Feature: The HRSG exhaust stack structure will be 80-feet tall.

- Alternative Technology Considered: The project objective of producing process steam limited the alternative review to solar thermal, geothermal, and biomass. None of these alternatives were superior to the proposed project.

- Alternative Fuel Considered: No alternative fuels were considered due to toxic air emissions.

- Alternative Equipment Considered: Only Best Available Control Technology capable of use with refinery fuel gas was considered for this project.

SURROUNDING SETTING:

The proposed facility will be located at the existing Valero Benicia refinery in the City of Benicia in Solano County. The proposed new facility will utilize 2 acres of already hardpacked or paved area, which will be re-graded to provide a level site.

The area can be best described as industrial. Northeast of site lies the remainder of the Benicia Industrial Park, which has numerous other industrial and commercial facilities. Southeast of the site are Interstate 680, more industrial uses, and Suisun Bay.

Southwest of the site and over a hilly ridge are the City of Benicia, residential areas, and Interstate 780 linking Benicia and Vallejo. Some residential development exists at the top of the ridge, providing views of the refinery and the Bay. Northwest of the site lie East 2nd Street, an arterial from Benicia to the Industrial Park and hilly open space. Valero owns substantial lands northwest of East 2nd Street which act as a buffer to the refinery.

RELATED FACILITIES

- <u>Switchyard</u>
- Existing PG&E 230 kV switchyard and new 12 kV switch house within refinery property.

- <u>Electric Transmission</u>
- Voltage: 12 kV
- Type: Existing underground
- Tower Type: No towers, on-site or off-site
- Route: On existing site from project to new switch house next to existing switchyard
- Length: Approximately 1,000 feet of new electrical feeder
- Point of Interconnection: PG&E Switchyard within refinery property.
- Foreseeable Effect on Downstream Transmission Facilities: None needed.
- Alternative Routes Considered: N/A

- <u>Gas Pipeline</u>
- Diameter: 12-inch pipeline
- Length: 1,000 feet
- Construction Method: Trench and fill

AIR QUALITY

	PROJECT	CUMULATIVE IMPACTS	LORS COMPLIANCE
Construction Equipment	**MITIGATION**	**None**	**YES**
	Construction: Large construction equipment potentially contributes to existing violations of state 24-hour and annual PM_{10} standards. To minimize PM 10 emissions, the Project Owner shall require its construction contractors to minimize emissions from diesel powered earthmoving equipment. **MITIGATION:** X The Project Owner shall require construction contractors to mitigate diesel emissions by measures such as the use of catalyzed diesel particulate filers, use of ultra-low sulfur diesel fuel, and/or use of EPA and CARB 1996 certified diesel engines. Condition **AQ-55**. *References: SA Air Quality, pp. 4.1-16, 19.*		
Construction Dust	**MITIGATION**	**None**	**YES**
	Grading and excavation activities potentially produce dust that can be transported off-site by wind. To control airborne fugitive dust, the Project Owner shall water or apply chemical dust suppressants to disturbed areas, apply gravel or paving to traffic areas, and wash wheels of vehicles or large trucks leaving the site. . **MITIGATION:** X The Project Owner shall prepare and implement a Fugitive Dust Mitigation Plan to minimize dust during construction. Condition: **AQ-52, AQ-53 & AQ-54.** *References: SA Air Quality, pp. 4.1-16, 19.*		

Federal & California Air Quality Standards	PROJECT	CUMULATIVE IMPACTS	LORS COMPLIANCE
Á **Ozone (O3)**	**MITIGATION**	**None**	**YES**
	The power plant location is designated non-attainment for ozone, which is formed by chemical reactions between nitrogen oxides (NOx) and precursor organic compounds (POC) in sunlight. Power plant emissions of NOx and POCs as ozone precursors will be minimized by low-NOx combustors in the combustion turbine and Selective Catalytic Reduction (SCR) in the flue gas stack. A CO oxidizing catalyst in the HSRG will further reduce POC emissions. After initial compliance with Best Available Control Technology (BACT) emission limitations is established with natural gas, the District will establish BACT for refinery fuel gas. Since minimum emissions would contribute to a violation of the ozone standards, the Project Owner shall obtain NOx and VOC offsets. New EPA 8-hour ozone standards are not in effect due to litigation. **MITIGATION:** X The Project Owner shall control NOx (as NO_2) by using SCR to meet BACT emission limitations of 2.5 ppm (natural gas & refinery fuel gas). Conditions: **AQ-17, to AQ-20.** X The Project Owner shall install a continuous emissions monitoring system for NOx and report emissions. Condition: **AQ-8**. X The Project Owner shall monitor and report ammonia use in the SCR and ammonia emissions. Condition: **AQ-18**. X The Project Owner shall obtain NOx & POC offsets. Conditions: **AQ-1, AQ-41 & AQ-42** X Excursions in NOx emissions shall be limited. Condition: **AQ-56** *References: PDOC pp. 6, 6, 13, 18.*		
Á **Nitrogen Dioxide (NO2; also generically known as NOx)**	**MITIGATION**	**None**	**YES**
	The power plant location is designated attainment for NO_2. NO_2 is formed in the combustion process. Power plant NOx emissions will be minimized by low-NOx combustors in the combustion turbine and water injection plus Selective Catalytic Reduction (SCR) in the flue gas stack. For NO_2, the emission rate is limited to 2.5 ppm (natural gas and refinery gas). After initial compliance with BACT is established with natural gas, the District will establish BACT for refinery fuel gas. NO_2 will be continuously monitored in the stack. Minimum emissions would not cause a violation of NO_2 standards; however, NOx offsets are required as precursors to ozone. *References: PDOC pp. 6, 7, 13, 18.*		

	PROJECT	CUMULATIVE IMPACTS	LORS COMPLIANCE
Á **Carbon Monoxide (CO)**	**MITIGATION**	**None**	**YES**
	The power plant location is designated attainment for federal CO and California CO. CO is formed in the combustion process. CO emissions will be minimized by good combustion practices and an oxidizing catalyst in the HSRG. For CO, the emission rate is limited to 10.0 ppm. After initial compliance with BACT is established with natural gas, the District will establish BACT for refinery fuel gas. CO will be continuously monitored in the stack. **MITIGATION:** X The Project Owner shall control CO by using an oxidizing catalyst to meet BACT emission limitations of 10 ppm. Conditions: **AQ-17 to AQ-20.** X The Project Owner shall install a continuous emissions monitoring system for CO and report emissions. Condition: **AQ-8.** *References: PDOC p. 6, 8, 15, 16, 20.*		
Á **Particulate Matter 10 Microns (PM_{10})**	**MITIGATION**	**None**	**YES**
	The power plant location is designated non-attainment for state 24-hour PM_{10}. Primary PM_{10} is formed by the combustion gases in the exhaust stack. Secondary PM_{10} is formed downstream by mixed gases in the atmosphere. After initial compliance with BACT is established with natural gas, the District will establish BACT for refinery fuel gas. **MITIGATION:** X The Project Owner shall control PM_{10} to meet an emission limitation of 2.49 lbs/hr. Condition: **AQ-19**. X The Project Owner shall conduct source testing and report emissions. Conditions**: AQ-20 & AQ 21**. X The Project Owner shall obtain PM_{10} offsets for PM_{10} attainment from the shutdown of on-site boilers. Condition: **AQ-51** *References: PDOC pp. 6, 9, 17, 20.*		

	PROJECT	CUMULATIVE IMPACTS	LORS COMPLIANCE
Á **Sulfur Dioxide (SO2)**	**MITIGATION**	**None**	**YES**
	The power plant location is designated attainment for SO2. Power plant SO2 emissions using refinery gas from the refining process will be somewhat higher compared to the exclusive use of natural gas. Valero will scrub the refinery gas to remove as much sulfur as practicable before combustion. After initial compliance with BACT is established with natural gas, the District will establish BACT for refinery fuel gas. Valero will curtail SO2 emissions throughout the refinery so that the cogeneration project will not cause a net increase in SO2 emissions from the facility. **MITIGATION**: X The Project Owner shall control SOx (as SO2) to meet an emission limitation. Condition: **AQ-18**. X The Project Owner shall conduct source testing and report emissions. Condition: **AQ-8**. X The Project Owner shall obtain SOx offsets through refinery curtailments. Condition: **AQ-2**. *References: PDOC pp. 6, 8, 9, 16, 19.*		
Á **Precursor Organic Compounds (POC)**	**MITIGATION**	**None**	**YES**
	There are no state or federal standards for POC, per se. POCs are a precursor for ozone. (See ozone, above) Consequently, limiting POC emissions and the use of POC offsets are part of the strategy for ozone attainment. POCs are formed in the combustion process. BACT for POC emissions will be achieved by use of good combustion practices, which use a fuel to air ratio resulting in low POC emissions. The oxidation catalyst for CO emissions further reduces POC emissions. After initial compliance with BACT is established with natural gas, the District will establish BACT for refinery fuel gas. **MITIGATION:** X The Project Owner shall control POC to meet an emission limitation of 2.0 ppm. Conditions: **AQ-18 & AQ-19**. X The Project Owner shall obtain POC offsets for ozone attainment. Condition: **AQ-1, AQ-41 & AQ-42**. *References: PDOC pp. 8, 16, 20.*		

	PROJECT	CUMULATIVE IMPACTS	LORS COMPLIANCE
Commissioning & Startup	**Insignificant**	**None**	**YES**
	The initial commissioning of a power plant refers to the time frame between completion of construction and the consistent production of electricity for sale on the market. Normal operating emission limits usually do not apply during initial commissioning procedures. The turbines will go through several layers of test during initial commissioning. Commissioning is a one-time event, subject to controls to minimize emissions. Therefore, there are no significant air quality impacts from facility commissioning. All startup scenarios result in emissions that are higher than normal operating emission limits; however, the number of startup events and their duration are controlled by District rules. Thus, there is no significant air quality impact from facility startup. *Reference: PDOC, p. 10.*		
Cooling Towers	**MITIGATION**	**None**	**None**
	Cooling tower drift consists of small water droplets, which contain particulate matter that originate from the total dissolved solids in the circulating water. To limit these particulate emissions, drift eliminators are installed in the cooling tower to capture these water droplets. BAAQMD rules do not require permits for most cooling towers. Energy Commission staff calculated that the project cooling towers would contribute 0.661 tons per year of PM_{10} to the existing violation of the state 24-hour standard. **MITIGATION:** X The Project Owner shall surrender 0.661 tons per year of PM_{10} ERCs from the 0.94 tpy PM_{10} credit available to it. Condition: **AQ-41, AQ-42 & AQ-51**. *References: SA Air Quality, p. 4.1-21.*		

AIR QUALITY – GENERAL

This analysis evaluates the expected air quality impacts of the emissions of criteria air pollutants due to the planned construction and operation of the project. Criteria air pollutants are defined as those for which a state or federal ambient air quality standard has been established to protect public health. They include nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O3), precursor organic compounds (POCs) and particulate matter less than 10 microns in diameter (PM_{10}).

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

- whether the project conforms with applicable Federal, State and District air quality laws, ordinances, regulations and standards;
- whether the project will cause significant air quality impacts, including a new violation of ambient air quality standards or contribution to existing violations of those standards; and
- whether the mitigation proposed for the project is adequate to lessen the potential impacts to a level of insignificance.

The Bay Area Air Quality Management District (BAAQMD or District), in preparing its Determination of Compliance, is processing the project in separate applications since Valero is proposing two combustion turbine generation facilities with a maximum electrical output of 51 MW each. Phase I will produce electricity for the Valero Benicia Refinery which will virtually eliminate the need for local utility power. Phase II, which Valero considers optional, would produce electricity that could be sold into the California grid.

Project equipment for each phase includes a General Electric LM 6000 combustion turbine generator (refinery fuel gas and/or natural gas fired) with water injected low NOx burners; a heat recovery steam generator (HRSG) with a low NOx duct burner supplemental firing system; and a selective catalytic reduction (SCR) system and CO oxidizing catalyst system.

Construction Equipment/Fugitive Dust

The power plant construction requires the use of large earth moving equipment, which generate considerable combustion emissions themselves, along with creating fugitive dust emissions during grading, site preparation, foundations, underground utility installation, and building erection.

Valero did not performed air dispersion modeling analyses of the potential construction impacts at the project site. However, both Valero and the Energy Commission staff agreed that any construction impacts would be mitigated to the extent feasible by “boilerplate” construction Conditions of Certification. The boilerplate construction Conditions of Certification were derived from previously certified larger and longer construction projects and thus will be very conservative for this project.

Although construction of the project and ancillary facilities will result in unavoidable short-term impacts, the project's location in the center of the refinery will prevent the general public from being exposed to the construction impacts associated with the project. Nevertheless, staff believes that the impact from the construction of the project could have a significant and unavoidable impact on the PM_{10} ambient air quality standards, and should be avoided or mitigated, to the extent feasible.

The project will undertake one or more of the following measures to reduce emissions during construction activities:

To control exhaust emissions from heavy diesel construction equipment:

- Limit engine idle time and shutdown equipment when not in use.
- Perform regular preventative maintenance to reduce engine problems.
- Use CARB Low-Sulfur fuel for all heavy construction equipment.
- Ensure that all heavy construction equipment complies with EPA 1996 Diesel standards.

To control fugitive dust emissions:

- Use water application or chemical dust suppressant on unpaved travel surfaces and parking areas.
- Wetting or covering of stored earth materials on site.
- Require all trucks hauling loose material to either cover or maintain a minimum of two feet of freeboard.
- Use gravel pads and wheel washers as needed.
- Use wind breaks and chemical dust suppressant or water application to control wind erosion from disturbed areas.

With the implementation of these mitigation measures, the construction air quality impacts will be mitigated to the extent feasible and, when combined with the temporary nature of this construction, will be insignificant. SA Air Quality, pp. 16, 19

MITIGATION:

X The Project Owner shall require construction contractors to mitigate diesel emissions by measures such as the use of catalyzed diesel particulate filers, use of ultra-low sulfur diesel fuel, and/or use of EPA and CARB 1996 certified diesel engines. Condition **AQ-55**.

X The Project Owner shall prepare and implement a Fugitive Dust Mitigation Plan to minimize dust during construction. Conditions: **AQ-52, AQ-53 & AQ-54.**

<u>Ozone</u>

Ozone is not directly emitted from stationary or mobile sources, but is formed as the result of chemical reactions in the atmosphere between directly emitted air pollutants. Nitrogen oxides (NOx) and hydrocarbons (Precursor Organic Compounds (POCs) interact in the presence of sunlight to form ozone. The BAAQMD is designated non-attainment for state standard and federal 1-hour ozone standard. Attaining the federal ozone ambient air quality standard is typically planned for by controlling the ozone precursors, NO_2 and POC. The

1997 Ozone State Implementation Plan for the District relies on the California Air Resource Board (CARB) to control mobile sources, the US Environmental Protection Agency (US EPA) to control emission sources under federal jurisdiction, and District to control local industrial sources. New EPA 8-hour ozone standards are not in effect due to litigation.

Ozone reduction requires reducing NOx and POC emissions. To reduce NOx emissions, Valero proposes to use low NOx combustors with water injection in the combustion turbines and a post-combustion Selective Catalytic Reduction (SCR) system with an ammonia injection grid. To reduce POC (and CO) emissions, Valero proposes to use a combination of good combustion and maintenance practices, along with an oxidizing catalyst located in the HRSG and offsets.

Low-NOx Combustors

Over the last 20 years, combustion turbine manufacturers have focused their attention on limiting the NOx formed during combustion. General Electric also uses water injection in the combustor cans to reduce combustion temperatures and the formation of NOx.

Selective Catalytic Reduction (SCR)

To further reduce the emissions from the combustion turbines before they are exhausted into the atmosphere, flue gas controls, primarily catalyst systems, will be installed in the HRSGs. Selective catalytic reduction refers to a process that chemically reduces NOx by injecting ammonia into the flue gas stream over a catalyst in the presence of oxygen. The process is termed “selective” because the ammonia reducing agent preferentially reacts with NOx rather than oxygen, producing inert nitrogen and water vapor. The performance and effectiveness of SCR systems are dependent upon remaining in a range of operating temperatures, which may vary with catalyst designs.

Valero is proposing to use low-NOx combustors with water injection and SCR with ammonia injection to control NOx emission levels to below 2.5 ppm on a 1-hour average when fired with natural gas. The concentration of the NOx emissions will be continuously monitored in the stack.

A NOx limit of 2.5 ppm is currently consider BACT for natural gas firing by both the EPA and California Air Resources Board. It is unknown what BACT will be for refinery fuel gas. Based upon manufacturer's data and a cost effectiveness analysis, the District specified 2.5 ppm. After establishing compliance with BACT on natural gas, the project will be allowed to operate on refinery fuel gas as the primary fuel. Thereafter, the District will establish BACT for refinery fuel gas based upon an initial source test and continuous emissions monitoring (CEM) data.

However, refinery fuel gas does not have the same combustion properties as natural gas, so that spikes in NOx emissions are foreseeable. While adjustments to water injection and ammonia injection will largely respond to such spikes, there are likely to be instances when the 2.5 ppm emission limit will be exceeded. While such instances should not be so frequent to suggest a variance is appropriate, the nature of refinery fuel gas suggests that an excursion limitation is appropriate so as not to create a violation.

Even with the power plant using BACT, the NOx and POC emissions will contribute to ongoing exceedences of the ozone standards. Thus, Valero must mitigate these new emissions by obtaining offsets. Valero proposes to shutdown two existing refinery steam boilers for Phase I. For Phase II, Valero will shut down a third existing steam boiler and surrender banked NOx credits. (PDOC pp. 6, 7, 13-18.)

MITIGATION:

- X The Project Owner shall control NOx (as NO2) by using SCR to meet BACT emission limitations of 2.5 ppm (natural gas and refinery fuel gas). Conditions: **AQ-17 to AQ-20.**
- X The Project Owner shall install a continuous emissions monitoring system for NOx and report emissions. Conditions: **AQ-8.**
- X The Project Owner shall monitor and report ammonia use in the SCR and ammonia emissions. Conditions**: AQ-18.**
- X The Project Owner shall obtain NOx and POC offsets. Condition: **AQ-1, AQ-41 & AQ-42.**
- X Excursions in NOx emissions shall be limited. Condition: **AQ-56**

Nitrogen Dioxide

Nitrogen dioxide (NO2) can be emitted directly as a result of combustion or formed from nitric oxide (NO) and oxygen. NO is typically emitted from combustion sources and readily reacts with oxygen or ozone to form NO2. The NO reaction with ozone can occur within minutes and is typically referred to as ozone scavenging. By contrast, the NO reaction with oxygen is on the order of hours under the proper conditions. The District is designated attainment for both the state and federal NO2 ambient air quality standards.

As discussed above for ozone, the Project Owner proposes to reduce NOx emissions to meet the Best Available Control Technology (BACT) of 2.5 ppm level (natural gas) by using water injected low NOx combustors in the combustion turbines and a post-combustion Selective Catalytic Reduction system with an ammonia injection grid. It is unknown what BACT will be for refinery fuel gas. Based upon manufacturer's data, the District specified 2.5 ppm. After establishing compliance with BACT on natural gas, the project will be allowed to operate on refinery fuel gas as the primary fuel. Thereafter, the District will establish BACT for refinery fuel gas based upon an initial source test and continuous emissions monitoring (CEM) data.

The District reviewed two other technologies (SCONOX & XONON) capable of controlling NOx emission from combustion turbines to 2 ppm or below. This project's outlet temperatures exceed those of any current SCONOX applications, thus making SCONOX infeasible for this project. At the current time, XONON is not technically feasible for applications the size of this project. Water injection into the low NOx combustors combined with SCR, with ammonia slip limited to 10 ppm, represents BACT for this project.

Even with BACT, Valero must obtain NOx offsets at a ratio of 1.15 to 1.0 to avoid significant ozone impacts. Valero intends to shut down two existing boilers that will not longer be needed to provide steam. Emission reductions from these sources will be used to offset NOx emissions for Phase I. A third existing boiler will be shutdown for Phase II, and Valero will

surrender banked NOx credits. No significant impact from NO2 emissions is expected. (PDOC, p. 6, 7, 13-18.)

Carbon Monoxide

Carbon monoxide (CO) is a directly emitted air pollutant as a result of combustion. The District is designated attainment for the state standard and unclassified/attainment for the federal 1-hour and 8-hour CO ambient air quality standards.

Oxidizing Catalyst

To reduce the turbine carbon monoxide (CO) emissions, the Valero proposes to install an oxidizing catalyst, which is similar in concept to catalytic converters used in automobiles. The catalyst is usually coated with a noble metal, such as platinum, which will oxidize unburned hydrocarbons and CO to water vapor and carbon dioxide (CO_2). The CO catalyst is proposed to limit the CO concentrations exiting the HRSG stack to a BACT limit of 10 ppm (natural gas). After establishing compliance with BACT on natural gas, the project will be allowed to operate on refinery fuel gas as the primary fuel. Thereafter, the District will establish BACT for refinery fuel gas based upon an initial source test and continuous emissions monitoring (CEM) data. CO emissions from the stack will be continuously monitored. (PDOC p. 15-16)

CO offsets are not required; however, the shutdown of the two existing steam boilers will reduce total CO emissions from the overall facility. (PDOC p. 20)

MITIGATION:

- X The Project Owner shall control CO by using an oxidizing catalyst to meet BACT emission limitations of 10 ppm. Conditions: **AQ-17 to AQ-20**
- X The Project Owner shall install a continuous emissions monitoring system for CO and report emissions. Conditions: **AQ-8**

Particulate Matter – PM_{10}

PM_{10} is a particulate that is 10 microns in diameter or smaller and is suspended in air. PM_{10} can be directly emitted from a combustion source (primary PM_{10} or $PM_{2.5}$), soil disturbance (fugitive dust) or it can form downwind (secondary PM_{10}) from some of the constituents of combustion exhaust (NOx, SOx and ammonia). The project location has been designated unclassified/attainment for the federal 24-hour and annual PM_{10} ambient air quality standards, but non-attainment for the state 24-hour PM_{10} ambient air quality standards.

Emissions of primary PM_{10} are reduced by the use of natural gas as the power plant fuel. Natural gas contains very little noncombustible gas or solid residue.

For initial compliance purposes, Valero will verify compliance with BACT while firing natural gas. BACT on natural gas for PM_{10} emissions is a sulfur content not to exceed 1.0 grains/100scf achieved through use of PUC-grade natural gas. Based upon source test data from the turbine manufacture for firing with refinery fuel gas, the target mass emissions are

2.49 lbs/hr of PM_{10}. BACT for refinery fuel gas will be demonstrated through an initial source test and the 2.49 lbs/hr may be adjusted. (PDOC p. 17)

The project's PM_{10} emissions will contribute to an existing violation of the state 24-hour PM10 standard. Thus, Valero must mitigate these new emissions by obtaining PM_{10} offsets at a 1.0 to 1.0 ratio. Valero will obtain PM_{10} offsets through the shutdown of existing steam boilers. New EPA standards for $PM_{2.5}$ are not in effect to due litigation. (PDOC p. 20)

MITIGATION:

- X The Project Owner shall control PM_{10} to meet an emission limitation of 1.55 lbs/hr. Conditions: **AQ-19**.
- X The Project Owner shall conduct source testing and report emissions. Conditions: **AQ-20 & AQ-21**.
- X The Project Owner shall obtain PM_{10} offsets. Condition: **AQ-41 & AQ-42.**

Sulfur Dioxide

Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. Fuels such as natural gas contain very little sulfur and consequently have very low SO2 emissions when combusted. The District is designated attainment for all the SO2 state and federal ambient air quality standards.

There is no BACT level for SO_2 when firing refinery fuel gas. Thus, a case-by-case analysis will need to be performed. To control SO_2 emissions, the sulfur levels in the refinery fuel gas will need to be at the lowest level practicable. Valero has made enhancements to its scrubber system used in current refinery operations to decrease the level of total reduced sulfur (TRS) which is limited to 51 ppm TRS for a new District-permitted steam boiler. Thus, BACT is a TRS concentration not to exceed 51 ppm (annualized 24-hour average).

SO_2 offsets are required at a ratio of 1.0 to 1.0. Valero does not have any SO_2 credits in the District's formal emission bank. Attempts to purchase deposited SO_2 credits from third parties have been fruitless. Therefore, Valero proposes to provide SO_2 offsets by curtailing SO_2 emissions from refinery sources. (PDOC pp. 6, 8, 9, 16 & 19.)

MITIGATION:

- X The Project Owner shall control SOx (as SO_2) to meet an emission limitation. Condition: **AQ-18**.
- X The Project Owner shall conduct source testing and report emissions. Condition: **AQ-8**
- X The Project Owner shall obtain SOx offsets through refinery curtailments. Condition: **AQ-2.**

Precursor Organic Compounds

There are no state or federal standards for POCs. POCs are significant emissions since they are precursors (contributors) to ozone. Ozone attainment, therefore, requires minimum POC emissions and, as appropriate, POC offsets. POCs are formed in the combustion process.

BACT for POCs will be achieved by use of low-NOx combustors, which use air to fuel ratios that result in low combustion POCs while still maintaining low NOx levels. BACT for POCs has historically been use of best combustion practices, since the majority of POC emissions are compounds that are not susceptible to control by oxidizing catalysts.

For initial compliance purposes, Valero will verify compliance with BACT while firing natural gas. BACT for refinery fuel gas will be demonstrated through an initial source test and annual source testing. The POC emissions will be reduced to 2.0 ppmvd or less through the use of an oxidation catalyst and use of best combustion practices. (PDOC p. 8, 16)

Additionally, POC offsets are necessary for ozone attainment at a ratio of 1.15 to 1.0. Valero proposes to obtain POC offsets from shutting down existing steam boilers. (PDOC p. 20)

MITIGATION:

- X The Project Owner shall control POC to meet an emission limitation of 2.0 ppmvd. Conditions: **AQ-18 & AQ-19**.
- X The Project Owner shall obtain POC offsets. Conditions: **AQ-1, AQ-41 & AQ-42.**

Commissioning and Start-Up

The initial commissioning of a power plant refers to the time frame between completion of construction and the consistent production of electricity for sale on the market. Normal operating emission limits usually do not apply during initial commissioning procedures. The turbines will go through several layers of test during initial commissioning. During the first set of tests, post-combustion control will not be operational (i.e., the SCR and oxidation catalyst).

All startup scenarios result in emissions that are higher than normal operating emission limits since equipment is not up to normal operating temperatures.

Both the initial commissioning and start-up sequences are subject to District rule to minimize emissions. Since these event are of short duration and subject to controls and procedures to minimize emissions, there will not be a significant impact from commissioning and start up so longs as District rules are met. (PDOC p.10)

Cooling Towers

Cooling tower drift consists of small water droplets, which contain particulate matter that originate from the total dissolved solids in the circulating water. To limit these particulate emissions, drift eliminators are installed in the cooling tower to capture these water droplets.

BAAQMD rules do not require permits for most cooling towers. Energy Commission staff calculated that the project cooling towers would contribute 0.661 tons per year of PM10 to the existing violation of the state 24-hour standard. (SA Air Quality, p. 4.1-21)

MITIGATION:

- X The Project Owner shall surrender 0.661 tons per year of PM10 ERCs from the 0.94 tpy PM_{10} credit available to it. Condition: **AQ-51**.

Visibility Impacts

Ordinarily, a visibility analysis of the project's gaseous emissions is required under the Federal Prevention of Significant Deterioration (PSD) permitting program. Under District rules, this project's emission levels do not trigger a PSD review. Visibility impacts are assumed to be insignificant since the PSD trigger levels are not met. (PDOC pp. 21 & 22)

Cumulative Impacts

To evaluate reasonably foreseeable future impacts as part of the project impacts analysis, Valero performed a cumulative modeling analysis. The cumulative analysis included potential and/or permitted, but not yet operating, projects located up to six miles from the proposed facility site. Valero consulted the District to identify potential and/or permitted projects of size that might interact with the Valero project plumes and impacts. None were identified, so additional analysis and cumulative modeling were not conducted.

Finding

With the implementation of the Conditions of Certification below, the project conforms with applicable laws related to air quality, and all potential adverse impacts to air quality will be mitigated to insignificance.

CONDITIONS OF CERTIFICATION

DETERMINATION OF COMPLIANCE CONDITIONS

Definitions:

1-hour period:	Any continuous 60-minute period beginning on the hour.
Calendar Day:	Any continuous 24-hour period beginning at 12:00 AM or 0000 hours.
Year:	Any consecutive twelve-month period of time
Heat Input:	All heat inputs refer to the heat input at the higher heating value (HHV) of the fuel, in Btu/scf.
Rolling 3-hour period:	Any three-hour period that begins on the hour and does not include start-up or shutdown periods.
Firing Hours:	Period of time during which fuel, other than pilot gas, is flowing to a unit, measured in fifteen-minute increments.
MM Btu:	million British thermal units
Gas Turbine Start-up Mode:	The lesser of the first 256 minutes of continuous fuel flow to the Gas Turbine after fuel flow is initiated or the period of time from Gas Turbine fuel flow initiation until the Gas Turbine achieves two consecutive CEM data points in compliance with the emission concentration limits of conditions 20(b) and 20(d).

Gas Turbine Shutdown Mode:	The lesser of the 30 minute period immediately prior to the termination of fuel flow to the Gas Turbine or the period of time from non-compliance with any requirement listed in Conditions 20(b) through 20(d) until termination of fuel flow to the Gas Turbine.
Corrected Concentration:	The concentration of any pollutant (generally NO_x, CO, or NH_3) corrected to a standard stack gas oxygen concentration. For emission point P-60 (combined exhaust of S-1030 Gas Turbine and S-1031 HRSG duct burners) and emission point P-62 (combined exhaust of S-1032 Gas Turbine and S-1033 HRSG duct burners) the standard stack gas oxygen concentration is 15% O_2 by volume on a dry basis.
Commissioning Activities:	All testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the construction contractor to insure safe and reliable steady state operation of the gas turbines, heat recovery steam generators, and associated electrical delivery systems.
Commissioning Period:	The Period shall commence when all mechanical, electrical, and control systems are installed and individual system start-up has been completed, or when a gas turbine is first fired, whichever occurs first. The period shall terminate when the plant has completed performance testing, is available for commercial operation.
Precursor Organic Compounds (POCs):	Any compound of carbon, excluding methane, ethane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate
CEC CPM:	California Energy Commission Compliance Program Manager

Conditions for the Approval of the Authority to Construct for the Valero Cogeneration Project - S-1030, S-1031, S-1032, S-1033:

AQ-1: Prior to the approval of the Authority to Construct S-1030, S-1031, S-1032 and S-1033, the owner will provide the following offsets: (Basis: NOx and POC Offsets)

NOx	31.418 TPY from Cert # 703
POC as NOx	2.42 TPY from Cert #682
POC	7.56 TPY from Cert #682

Verification: The project owner shall provide copies of the ERC to the District and the CEC CPM 30 days prior to the combustion of fuel in the gas turbines.

AQ-2: For SO2 emissions offsets, a curtailment group is established as follows: (Basis: SO2 offsets)

	Source	Base Line	
SG 1032	S-237	8.6 tpy	
F 4460	S-220	10.0 tpy	
MTBE Ships		9.5 tpy	
New Cogen	S-1030, 1031	N/A	App 2488
New Cogen	S-1032, 1033	N/A	App 2695
ERC's Deposited		0.0 tpy	Deposits applied as credits
		28.1 tpy	Not to be exceeded.

a. SO2 emissions from the Curtailment Group will not exceed 28.1 tpy for any consecutive four quarter period.

b. Emissions will be calculated using fuel flow meters and the TRS Gas Chromatograph CEM's data, or stack SO2 CEMS and flow data, or other District approved methods.

c. Owner can deposit any valid ERC certificate into the group as a credit, at any time.

d. A quarterly report of the group emissions will be submitted to the District, in a District approved format, to document compliance.

e. Sources may be added to or deleted from the group at Valero's request subject to District approval. This process will increase or decrease the total emission limit for the group by the source's base line amount, as calculated per the District's ERC procedures found in Section 405 of Regulation 2, Rule 2.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. A quarterly report of the group emissions will be submitted to the District, in a District approved format, to document compliance. This report will be provided no later than 30 days after the end of the quarter

Conditions for the Commissioning Period - S-1030, S-1031, S-1032, S-1033:

AQ-3: The owner/operator of the proposed power plant (S-1030, S-1031, S-1032 and S-1033) shall minimize emissions of carbon monoxide and nitrogen oxides from these sources to the maximum extent possible during the commissioning period. Conditions AQ-3 through AQ-12 shall only apply during the commissioning period as defined above. Unless otherwise indicated, the remaining conditions shall apply after the commissioning period has ended.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

AQ-4: At the earliest feasible opportunity in accordance with the recommendations of the equipment manufacturers and the construction contractor, the S-1030 Gas Turbine combustors and S-1031 Heat Recovery Steam Generator duct burners shall be tuned to minimize the emissions of carbon monoxide and nitrogen oxides.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

AQ-5: At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturers and the construction contractor, the A-60/A-62 SCR System and A-61/A-63 CO Oxidation Catalyst System shall be installed, adjusted, and operated to minimize the emissions of carbon monoxide and nitrogen oxides from S-1030, S-1031, S-1032, and S-1033.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

AQ-6: Coincident with the as designed operation of A-60/62 SCR System, the Gas Turbines (S-1030 and S-1032) and the HRSGs (S-1031 and S-1033) shall comply with the NO_x and CO emission limitations specified in conditions AQ-18(a) through AQ-18(b).

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

AQ-7: The owner/operator shall submit a plan to the District Permit Services Division and the CEC CPM at least four weeks prior to first firing of S-1030 and S-1032 Gas Turbine describing the procedures to be followed during the commissioning of the gas turbine and HRSG. The plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but not be limited to, the tuning of the combustors, the installation and operation of the SCR systems and oxidation catalysts, the installation, calibration, and testing of the CO and NO_x continuous emission monitors, and any activities requiring the firing of the Gas Turbine (S-1030 and S-1032) and HRSG (S-1031 and S-1033) without abatement by their respective SCR and CO Catalyst Systems.

Verification: The project owner shall submit a commissioning plan to the District and the CEC CPM at least four weeks prior to the first combustion of fuel in the CTG S-1030.

AQ-8: During the commissioning period, the owner/operator shall demonstrate compliance with conditions AQ-10 through AQ-12 through the use of properly operated, and maintained continuous emission monitors and data recorders for the following parameters:

- firing hours for the gas turbine and HRSG
- fuel flow rates through the train
- stack gas nitrogen oxide (and oxygen) emission concentrations at P-60/P-62
- stack gas carbon monoxide emission concentrations P-60/P-62
- stack gas SO2 emission concentrations at P-60/P-62 or fuel TRS/H2S concentrations.

The monitored parameters shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation) for the Gas Turbine (S-1030 and S-1032) and HRSG (S-1031 and S-1033). The owner/operator shall use District-approved methods to calculate heat input rates, NO_x mass emission rates, carbon monoxide mass emission rates, SOx mass emission rates, and emission concentrations of NO_x, SOx, and CO, summarized for each clock hour and each calendar day.

Verification: All records shall be retained on site for at least 5 years from the date of entry and made available to District, California Air Resources Board (CARB) and the Commission personnel upon request.

AQ-9: The District-approved continuous emission monitors specified in Air Quality Condition 8 shall be installed, calibrated, and operational prior to first firing of the Gas Turbine (S-1030 and S-1032) and Heat Recovery Steam Generator (S-1031 and S-1033). After first firing of the turbine, the detection range of these continuous emission monitors shall be adjusted as necessary to accurately measure the resulting range of CO, SOx, and NO_x emission concentrations. The type, specifications, and location of these monitors shall be subject to District review and approval.

Verification: The design details providing the type, specifications, and location of these monitors shall be submitted to the District for review and approval at least 30 prior to installation of the monitors.

AQ-10: The total number of firing hours of S-1030/S-1032 Gas Turbines and S-1031/S-1033 Heat Recovery Steam Generators without abatement of nitrogen oxide emissions by A-60/A-62 SCR System and/or A-61/A-63 Oxidation Catalyst System shall not exceed 500 hours during the commissioning period. Such operation of S-1030/S-1032 Gas Turbines and S-1031/S-1033 HRSGs without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR or Oxidation Catalyst Systems fully operational. Upon completion of these activities, the owner/operator shall provide written notice to the District Permit Services and Enforcement Divisions and the unused balance of the 500 firing hours without abatement shall expire.

Verification: The project owner shall provide written notice to the District Permit Services and Enforcement Divisions no more than 5 days after the completion of these activities.

AQ-11: The total mass emissions of nitrogen oxides, carbon monoxide, precursor organic compounds, PM10, and sulfur dioxide that are emitted by the Gas Turbines (S-1030 and S-1032) and Heat Recovery Steam Generators (S-1031 and S-1033) during the commissioning period shall accrue towards the consecutive twelve-month emission limitations specified in condition AQ-22.

Verification: The total mass emissions of nitrogen oxides, carbon monoxide, precursor organic compounds, PM10, and sulfur dioxide that are emitted by the Gas Turbines (S-1030/S-1032) and Heat Recovery Steam Generators (S-1031/S-1033) during the commissioning period shall be included in the annual report specified in condition AQ-62.

AQ-12: Combined pollutant mass emissions from the Gas Turbine (S-1030 and S-1032) and Heat Recovery Steam Generators (S-1031 and S-1033) shall not exceed the following limits during the commissioning period. These emission limits shall include emissions

resulting from the start-up and shutdown of the Gas Turbines (S-1030, S-1031, S-1032, & S-1033).

NO_x (as NO_2)	360.34 pounds per calendar day
CO	855.36 pounds per calendar day
POC (as CH_4)	97.776 pounds per calendar day
PM10	124.72 pounds per calendar day
SO_2	524.88 pounds per calendar day

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

Conditions for the Operation of Gas Turbines (S-1030 and S-1032) and the Heat Recovery Steam Generators (HRSG; S-1031 and S-1033)

AQ13: The Gas Turbine (S-1030 and S-1032) and HRSG Duct Burners (S-1031 and S-1033) shall be fired on refinery fuel or natural gas. (Basis: BACT for SO_2 and PM_{10}).

Verification: Fuel use shall be included in the annual report required per AQ-22.

AQ-14: The combined heat input rate to the power train consisting of a Gas Turbine and its associated HRSG (S-1030 and S-1031 or S-1032 and S-1033) shall not exceed 810 MM Btu per hour, averaged over any rolling 3-hour period. The gas turbine in each power train (S-1030 or S-1032) shall not exceed 500 MM Btu/hour (Basis: PSD for NO_x).

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

AQ-15: The combined heat input rate to the power train consisting of a Gas Turbine and its associated HRSG (S-1030 and S-1031 or S-1032 and S-1033) shall not exceed 19,440 MM Btu per calendar day. (Basis: PSD for PM_{10})

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

AQ-16: The combined cumulative heat input rate for the Gas Turbines (S-1030 and S-1032) and the HRSGs (S-1031 and S-1033) shall not exceed 12,702,000 MM Btu per year. (Basis: Offsets)

Verification: Annual heat input rates shall be included in the annual report required per AQ-22.

AQ-17: S-1030/S-1032 Gas Turbines and S-1031/S-1033 HRSGs shall be abated by the properly operated and properly maintained A-60/A-62 Selective Catalytic Reduction (SCR) System and A-61/A-63 CO Oxidation Catalyst System whenever fuel is combusted at those sources and the catalyst bed has reached minimum operating temperature. (Basis: BACT for NO_x)

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

AQ-18: The Gas Turbines (S-1030 and S-1032) and HRSGs (S-1031 and S-1033) when firing natural gas shall comply with requirements (a) through (f) under all operating scenarios, including duct burner firing mode. Requirements (a) through (f) do not apply during a gas turbine start-up or shutdown. (Basis: BACT, PSD, and Toxic Risk Management Policy)

(a) The nitrogen oxide emission concentration at emission points P-60 or P-62 shall not exceed 2.5 ppmv, on a dry basis, corrected to 15% O_2, averaged over any one hour period. (BACT for NO_x when firing natural gas)

(b) The carbon monoxide emission concentration at P-60 or P-62 shall not exceed 10 ppmv, on a dry basis, corrected to 15% O_2, averaged over any rolling 3-clock hour period. (BACT for CO when firing natural gas)

(c) Ammonia (NH_3) emission concentrations at P-60 or P-62 shall not exceed 10 ppmv, on a dry basis, corrected to 15% O_2, averaged over any rolling 3-hour period. Compliance with this ammonia emission concentration limit will be demonstrated by initial source test.

(d) Precursor organic compound (POC) mass emissions (as CH_4) at P-60 or P-62 shall not exceed 2.0372 pounds per hour or 0.002515 Lb/MM Btu of natural gas fired. (BACT for POC when firing natural gas)

(e) Sulfur dioxide (SO_2) mass emissions at P-60 or P-62 shall not exceed 1.134 pounds per hour (3-hour average) (BACT) or 0.0014 Lb/MM Btu of natural gas fired. (BACT for SO_2 when firing natural gas),

(f) Particulate matter (PM_{10}) mass emissions at P-60 or P-62 shall not exceed 4.795 pounds per hour or 0.00592 Lb/MM Btu of natural gas fired. (BACT for PM_{10} when firing natural gas)

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information shall be included in initial and annual source test reports and the annual reports required by AQ-22

AQ-19: The Gas Turbine (S-1030 and S-1032) and HRSG (S-1031 and S-1033) shall comply with requirements (a) through (h) under all operating scenarios, including duct burner firing

mode. Requirements (a) through (h) do not apply during a gas turbine start-up or shutdown. (Basis: BACT, PSD, and Toxic Risk Management Policy)

(a) Nitrogen oxide mass emissions (calculated in accordance with District approved methods as NO_2) at P-60 or P-62 shall not exceed 7.27 pounds per clock hour

(b) The nitrogen oxide emission concentration at emission points P-60 or P-62 shall not exceed 2.9 ppmv, on a dry basis, corrected to 15% O_2, averaged over any 3-clock hour period. (BACT for NO_x)

(c) Carbon monoxide mass emissions at P-60 or P-62 shall not exceed 17.82 pounds per clock hour, averaged over any rolling 3-hour period. This emission limitation shall be subject to adjustment based on the initial source test results. (PSD for CO)

(d) The carbon monoxide emission concentration at P-60 or P-62 shall not exceed 10 ppmv, on a dry basis, corrected to 15% O_2, averaged over any rolling 3-clock hour period. This emission limitation shall be subject to adjustment based on the initial source test results. (BACT for CO)

(e) Ammonia (NH_3) emission concentrations at P-60 or P-62 shall not exceed 10 ppmv, on a dry basis, corrected to 15% O_2, averaged over any rolling 3-hour period. Compliance with this ammonia emission concentration limit will be demonstrated by initial source test.

(f) Precursor organic compound (POC) mass emissions (as CH_4) at P-60 or P-62 shall not exceed 2.0372 pounds per hour. This limit is subject to adjustment based on the results of the initial source test. Demonstration of compliance will be based on source test results. (BACT)

(g) Sulfur dioxide (SO_2) mass emissions at P-60 or P-62 shall not exceed 5.569 pounds per hour (rolling monthly average) (BACT), nor 17.82 pounds per hour (3 hour average), nor 10.96 pounds per hour (24 hour average). (NSPS)

Either fuel sulfur (TRS) or stack SO2 must be monitored and meet the following limitation, as appropriate: Sulfur dioxide (SO_2) concentrations at P-60 or P-62 shall not exceed 1.404 ppmv, on a dry basis, corrected to 15% O2 on a rolling four quarter average, nor 2.747 ppmv, on a dry basis, corrected to 15% O2 on a 24 hour average, nor 4.477 ppmv, on a dry basis, corrected to 15% O2 on a three hour average.

SO_2 concentrations in refinery fuel gas shall not exceed 51 ppm TRS on a rolling monthly average, nor 100 ppm H_2S on a 24 hour average, nor 160 ppm H_2S on any three hour average.

(h) Particulate matter (PM_{10}) mass emissions at P-60 or P-62 shall not exceed 4.98 pounds per hour nor an average of 3.1 pounds per hours averaged over a year. This limit is subject to revision based on the results of the initial source test.

Demonstration of compliance will be based on source test results. (Basis: BACT for PM_{10})

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information shall be included in initial and annual source test reports and the annual reports required by AQ-22

AQ-20: A District approved initial source test will be commenced within 60 days of startup to demonstrate compliance with Conditions number 18 and 19. The test results will be forwarded to the District within 60 days of completion of the field test. The test should verify emission compliance near maximum firing on:

1. Gas Turbine firing natural gas only
2. Gas Turbine and HRSG firing natural gas only
3. Gas Turbine firing refinery fuel gas only
4. Gas Turbine and HRSG firing refinery fuel gas only.

(Basis: Compliance Verification with BACT)

Verification: A District approved initial source test shall be commenced within 60 days of startup to demonstrate compliance with Conditions number 18 and 19. The test results will be forwarded to the District within 60 days of completion of the field test.

AQ-21: The owner will conduct annual source tests and submit the results within 60 days of the test's completion. These tests will demonstrate compliance with POC and PM10 emission limits in conditions AQ-19 (f) and AQ-19 (h). (Basis: Compliance Monitoring)

Verification: Annual source test results shall be forwarded to the District within 60 days of completion of the test.

AQ-22: Total emissions from S-1030, S-1031, S-1032, and S-1033 shall not exceed the following annual limits: (Basis: Cumulative Increase, Offsets, PSD)

NOx – 57.207 TPY (based on CEM data)
POC - 16.512 TPY (based on source test results plus fugitive emissions of 0.945 tpy)
PM_{10} – 13.606 TPY (based on source test results)
SOx – 43.822 (based on quarterly curtailment group compliance under condition AQ-2)
CO - 139.694 TPY (based on CEM data)

Limits for POC, PM_{10}, and CO are subject to revision based on initial source test results.

Verification: An annual report will be prepared by owner and submitted to the District and the CEC CPM documenting compliance with these annual limitations to mass emissions. An annual report will be prepared by owner and submitted to the District documenting compliance with these annual limitations to mass emissions. A copy of the annual report shall be forwarded to the City of Benicia Public Library.

AQ-23: To demonstrate compliance with conditions **AQ-19(f)**, **AQ-19(g)** and **AQ-19(h)**, the owner/operator shall calculate and record on a daily basis, the Precursor Organic Compound (POC) mass emissions, Fine Particulate Matter (PM_{10}) mass emissions (including condensable particulate matter), and Sulfur Dioxide (SO_2) mass emissions from each power train. The owner/operator shall use the actual Heat Input Rates and District-approved emission factors to calculate these emissions. The calculated emissions shall be presented as follows:

(a) For each calendar day, POC, PM_{10}, and SO_2 emissions shall be summarized for: the combined power train: [Gas Turbine (S-1030)/ HRSG (S-1031)] or [Gas Turbine (S-1032)/ HRSG (S-1033)].

(b) On a daily basis, the 365 day rolling average cumulative total POC, PM_{10}, and SO_2 mass emissions, for both power trains [Gas Turbine (S-1030)/ HRSG (S-1031)] or [Gas Turbine (S-1032)/ HRSG (S-1033)].

(Basis: Offsets, PSD, Cumulative Increase)

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information shall be included in initial and annual source test reports and the annual reports required by AQ-22.

AQ-24: The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements for continuous emission monitors as specified in Volume V of the District's Manual of Procedures. The owner/operator shall notify the District's Source Test Section in writing of the source test protocols and projected test dates at least 7 days prior to the testing date(s). As indicated above, the Owner/Operator shall measure the contribution of condensable PM (back half) to the total PM_{10} emissions. However, the Owner/Operator may propose alternative measuring techniques to measure condensable PM such as the use of a dilution tunnel or other appropriate method used to capture semi-volatile organic compounds. Source test results shall be submitted to the District within 60 days of conducting the tests. (Basis: Source Test Compliance Verification)

Verification: The owner/operator shall notify the District's Source Test Section in writing of the source test protocols and projected test dates at least 7 days prior to the testing date(s).

AQ-25: The owner/operator shall submit all reports (including, but not limited to monthly CEM reports, monitor breakdown reports, emission excess reports, equipment breakdown reports, etc.) as required by District Rules or Regulations and in accordance with all procedures and time limits specified in the Rule, Regulation, Manual of Procedures, or Enforcement Division Policies & Procedures Manual. (Basis: Regulation 2-6-502)

Verification: The owner/operator shall submit all reports (including, but not limited to monthly CEM reports, monitor breakdown reports, emission excess reports, equipment

breakdown reports, etc.) as required by District Rules or Regulations and in accordance with all procedures and time limits specified in the Rule, Regulation, Manual of Procedures, or Enforcement Division Policies & Procedures Manual.

AQ-26: The owner/operator shall maintain all records and reports on site for a minimum of 5 years. These records shall include but are not limited to: continuous monitoring records (firing hours, fuel flows, emission rates, monitor excesses, breakdowns, etc.), source test and analytical records, natural gas sulfur content analysis results, emission calculation records, records of plant upsets and related incidents.

Verification: These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

AQ-27: The owner/operator shall notify the District of any violations of these permit conditions. Notification shall be submitted in a timely manner, in accordance with all applicable District Rules, Regulations, and the Manual of Procedures. Notwithstanding the notification and reporting requirements given in any District Rule, Regulation, or the Manual of Procedures, the owner/operator shall submit written notification (facsimile is acceptable) to the Enforcement Division within 96 hours of the violation of any permit condition. (Basis: Regulation 2-1-403)

Verification: The owner/operator shall notify the District of any violations of these permit conditions. Notification shall be submitted in a timely manner, in accordance with all applicable District Rules, Regulations, and the Manual of Procedures. Notwithstanding the notification and reporting requirements given in any District Rule, Regulation, or the Manual of Procedures, the owner/operator shall submit written notification (facsimile is acceptable) to the Enforcement Division within 96 hours of the violation of any permit condition.

AQ-28: The stack height of emission points P-60 and P-62 shall each be at least 80 feet above grade level at the stack base. (Basis: PSD, TRMP)

Verification: The design details providing the stack specifications shall be submitted to the District for review and approval at least 30 prior to the start of construction.

AQ-29: The Owner/Operator shall provide adequate stack sampling ports and platforms to enable the performance of source testing. The location and configuration of the stack sampling ports shall be subject to BAAQMD review and approval. (Basis: Regulation 1-501)

Verification: The design details providing the type, specifications, and location of these sampling ports shall be submitted to the District for review and approval at least 30 prior to installation of the sampling ports.

AQ-30: Within 180 days of the issuance of the Authority to Construct, the Owner/Operator shall contact the BAAQMD Technical Services Division regarding requirements for the

continuous monitors, sampling ports, platforms, and source tests required. All source testing and monitoring shall be conducted in accordance with the BAAQMD Manual of Procedures. (Basis: Regulation 1-501)

Verification: The design details providing the type and specifications of these sampling ports, monitors and source tests shall be submitted to the District for review and approval within 180 day from the decision.

AQ-31: The Cogeneration project shall comply with the continuous emission monitoring requirements of 40 CFR Part 75. (Basis: Regulation 2, Rule 7)

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

AQ-32: The startup period for the S-1030 and S-1032 Gas Turbines shall last for no more than one hour.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

AQ-33: Pursuant to BAAQMD Regulation 2, Rule 6, section 404.3, the owner/operator of the Valero Power Plant shall submit an application to the BAAQMD for a significant revision to the Major Facility Review Permit prior to commencing operation. (Basis: Regulation 2-6-404.3)

Verification: The project owner shall submit an application, pursuant to BAAQMD Regulation 2, Rule 6, section 404.3, to the District prior to commencing operation.

AQ-34: Pursuant to 40 CFR Part 72.30(b)(2)(ii) of the Federal Acid Rain Program, the owner/operator of the Valero Power Plant shall not operate either of the gas turbines until either: 1) a Title IV Operating Permit has been issued; 2) 24 months after a Title IV Operating Permit Application has been submitted, whichever is earlier. (Basis: Regulation 2, Rule 7).

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

Fugitive Equipment

AQ-35: All hydrocarbon control valves installed as part of the Cogeneration Project in Phase I shall be equipped with live loaded packing systems and polished stems, or equivalent.

Verification: The project owner shall provide copies of the design details of the ancillary equipment to the District at least 90 days prior to the delivery of the equipment to the project site.

AQ-36: All accessible hydrocarbon valves shall be inspected quarterly and inaccessible valves shall be inspected annually using a District approved leak detection device. Any valve found to be leaking in excess of 100 ppm shall be subject to the leak repair provisions of District Regulation 8, Rule 18.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

AQ-37: All connectors installed in the piping systems as a result of Phase I of the Cogeneration project shall be equipped with graphitic-based gaskets. Any connector found to be leaking in excess of 100 ppm shall be subject to the leak repair provisions of Regulation 8, Rule 18

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

AQ-38: All new hydrocarbon centrifugal compressors installed as part of Phase I of the Cogeneration project shall be equipped with "wet" dual mechanical seals with a heavy liquid barrier fluid, or dual dry gas mechanical seals buffered with inert gas. All compressors shall be inspected and repaired in accordance with District Regulation 8, Rule 18. All compressors found to leaking in excess of 500 ppm shall be subject to the leak repair provisions of Regulation 8, Rule 18.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

AQ-39: All new fugitive equipment in organic service will be integrated into the owner's fugitive equipment monitoring and repair program and will meet the requirements of District Regulation 8-18.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

AQ-40: The Phase I project shall consist of no more than 400 valves, 1200 connectors and 2 compressors. The POC emissions from these fugitive components shall not exceed 0.597 tons/year. The annual mass limit for POC may be adjusted based on final fugitive component

count. Any additional POC offsets required due to a larger fugitive component count will need to be provided prior to permit issuance.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

Contemporaneous Emissions reduction credit

AQ-41: The S-38 and S-39 steam boilers shall be completely shutdown no later than 90 days after startup of the S-1030 and S-1031 power train. (Basis: offsets)

Verification: The project owner shall surrender the operating permits for S-38 and S-39 to the District 90 days after start-up S-1030 and S-1031.

AQ-42: The S-41 steam boilers shall be completely shutdown no later than 90 days after startup of the S-1032 and S-1033 power train. (Basis: offsets)

Verification: The project owner shall surrender the operating permits for S-41 to the District 90 days after start-up S-1032 and S-1033.

CONDITIONS OF CERTIFICATION numbers AQ-43 through AQ-50 are reserved for future use.

ENGERY COMMISSION CONDITIONS
These conditions are not included in the District's Determination of Compliance.

For the purposes of these conditions, the following definitions apply:

(1) ACTIVE OPERATIONS shall mean any activity capable of generating fugitive dust, including, but not limited to, earth-moving activities, construction/demolition activities, or heavy- and light-duty vehicular movement.

(2) CHEMICAL STABILIZERS mean any non-toxic chemical dust suppressant which must not be used if prohibited for use by the Regional Water Quality Control Boards, the California Air Resources Board, the U.S. Environmental Protection Agency (U.S. EPA), or any applicable law, rule or regulation; and should meet any specifications, criteria, or tests required by any federal, state, or local water agency. Unless otherwise indicated, the use of a non-toxic chemical stabilizer shall be of sufficient concentration and application frequency to maintain a stabilized surface.

(3) CONSTRUCTION/DEMOLITION ACTIVITIES are any on-site mechanical activities preparatory to or related to the building, alteration, rehabilitation, demolition or improvement of property, including, but not limited to the following activities; grading, excavation, loading, crushing, cutting, planing, shaping or ground breaking.

(4) DISTURBED SURFACE AREA means a portion of the earth's surface which has been physically moved, uncovered, destabilized, or otherwise modified from its undisturbed natural soil condition, thereby increasing the potential for emission of fugitive dust.

(5) DUST SUPPRESSANTS are water, hygroscopic materials, or non-toxic chemical stabilizers used as a treatment material to reduce fugitive dust emissions.

(6) EARTH-MOVING ACTIVITIES shall include, but not be limited to, grading, earth cutting and filling operations, loading or unloading of dirt or bulk materials, adding to or removing from open storage piles of bulk materials, landfill operations, or soil mulching.

(7) FUGITIVE DUST means any solid particulate matter that becomes airborne, other than that emitted from an exhaust stack, directly or indirectly as a result of the activities of man.

(8) INACTIVE DISTURBED SURFACE AREA means any disturbed surface area upon which active operations have not occurred or are not expected to occur for a period of ten consecutive days.

(9) STABILIZED SURFACE means:
- (A) any disturbed surface area or open storage pile which is resistant to wind-driven fugitive dust;
- (B) any unpaved road surface in which any fugitive dust plume emanating from vehicular traffic does not exceed 20 percent opacity.

(10) VISIBLE ROADWAY DUST means any sand, soil, dirt, or other solid particulate matter which is visible upon paved road surfaces and which can be removed by a vacuum sweeper or a broom sweeper under normal operating conditions.

AQ-51: The project owner shall provide 0.661 tons per year of PM_{10} ERCs.

Verification: The project owner shall surrender the PM10 ERCs to the District and provide documentation to the CEC CPM 30 days after the start of project operation.

AQ-52: The project owner shall implement a CEC CPM approved fugitive Dust Control Plan.

Protocol: The plan shall include the following:

1. A description of each of the active operation(s) which may result in the generation of fugitive dust;
2. An identification of all sources of fugitive dust (e.g., earth-moving, storage piles, vehicular traffic, etc.
3. A description of the control measures to be applied to each of the sources of dust emissions identified above (including those required in AQ-71 and -72 below). The description must be sufficiently detailed to demonstrate that the applicable best available control measure(s) as specified in Table 1 (attached) will be utilized and/or installed during all periods of active operations;
4. In the event that there are special technical (e.g., non-economic) circumstances, including safety, which prevent the use of at least one of the required control measures for any of the sources identified, a justification statement must be provided to explain the reason(s) why the required control measures cannot be implemented.

Verification: Not later than sixty (60) days prior to the commencement of construction, the project owner shall submit the plan to the CEC CPM for review and approval. The project owner shall maintain daily records to document the specific actions taken pursuant to the plan and Table 1. A summary of the monthly activities shall be submitted to the CPM via the Monthly Compliance Report.

AQ-53: During the construction phase of the project, the project owner shall:

1. Prevent or remove within one hour the track-out of bulk material onto public paved roadways as a result of their operations, or take at least one of the actions listed in Table 2 (attached) to prevent the track-out of bulk material onto public paved roadways as a result of their operations and remove such material at anytime track-out extends for a cumulative distance of greater than 50 feet on to any paved public road during active operations;
2. Install and use a track-out control device to prevent the track-out of bulk material from areas containing soils requiring corrective to other areas within the project construction site and laydown area;
3. Minimize fugitive particulate emissions from vehicular traffic on paved roads and paved parking lots on the construction site by vacuum mechanical sweeping or water flushing of the road surface to remove buildup of loose material. The project owner shall inspect on a daily basis the conditions of the paved roads and parking lots to determine the need for mechanical sweeping or water flushing.

Verification: The project owner shall maintain a daily log during the construction phase of the project indicating: 1) the manner in which compliance with this condition or

Table 2 is achieved, and 2) the date and time when the inspection of paved roads and parking lots occurs and the date and time(s) when the cleaning operation occurs. The logs shall be made available to the California Energy Commission CPM upon request.

AQ-54: At any time when fugitive dust from OMGP project construction is visible in the atmosphere beyond the property line, the project owner will identify the source of the fugitive dust and implement one or more of the appropriate control measures specified in Table 3 (attached)

Verification: The project owner will maintain a daily log recording the dates and times that measures in Table 3 (attached) have been implemented and make them available to the CPM upon request.

AQ-55: The project owner shall mitigate, to the extent practical, construction related emission impacts from off-road, diesel fired construction equipment. Available measures which may be used to mitigate construction impacts include the following:

- Catalyzed Diesel Particulate Filters (CDPF);
- Ultra Low Sulfur Diesel fuel, with a sulfur content of 15 ppm or less (ULSD);
- Diesel engines certified to EPA and CARB 1996 or newer off-road equipment emission standards.

  Additionally, the project owner shall restrict idle time, to the extent practical, to no more than 10 minutes.

  The use of each mitigation measure is to be determined in advance by a Construction Mitigation Manager (CMM), who will be available at the project site(s). The CMM must be approved by the CPM prior to the submission of any reports.

  The CMM shall submit the following reports to the CPM for approval:

- Construction Mitigation Plan
- Reports of Change and Mitigation Implementation
- Reports of Emergency Termination of Mitigation, as necessary

  Diesel Construction Equipment Mitigation Plan:

  The Construction Mitigation Plan shall be submitted to the CPM for approval prior to rough grading on the project site, and must include the following:

- A list of all Diesel fueled, off-road, stationary or portable construction-related equipment to be used either on the project construction site or the construction sites of the related linear facilities. Equipment used less than 10 days need not be included in this list.
- Each piece of construction equipment listed under item (1) must demonstrate compliance with the following mitigation requirements:

• Engine Size (bhp)	• 1996 CARB or EPA Certified Engine	• Required Mitigation
• <100 bhp	• Yes or No	• - ULSD
• >100 bhp	• Yes	• - ULSD
• >100 bhp	• No	• ULSD and • CDPF, if suitable as determined by the CMM

- If compliance can not be demonstrated as specified under item (2), then the project owner may appeal for relief to the CPM. However, the owner must demonstrate that they have made a good faith effort to comply as specified under item (2).

Report of Change and Mitigation Implementation
Following the initiation of construction activities and if changes to mitigation measures are necessary, the CMM shall submit a Report of Change and Mitigation Implementation for approval to the CPM. This report must contain at a minimum the cause of any deviation from the Construction Mitigation Plan, and verification to the CPM of the Construction Mitigation Plan measures as well as new measures that were implemented.

The following is acceptable proof of compliance, other methods of proof of compliance must be approved by the CPM.

- EPA or CARB 1996 off-road equipment emission standards:
- A copy of the certificate from EPA or CARB.
- Purchase and use of ultra-low sulfur fuel (15ppm or less).
- Receipt or other documentation indicating type and amount of fuel purchased, from whom, where delivered and on what date; **and**
- A copy of the text included in the contract agreement with all contractors and sub-contractors for use of the ultra-low sulfur fuel in diesel burning construction equipment as identified in the Construction Mitigation Plan.
- Installation of CDPF:
- The suitability of the use of soot filters is to be determined by a qualified mechanic or engineer who must submit a report to the CPM for approval.
- Installation is to be verified by a qualified mechanic or engineer.
- Construction equipment engine idle time:

- A copy of the text included in the contract agreement with all contractors and sub-contractors to keep engine idle time to 10 minutes or less to the extent practical.

Report of Emergency Termination of Mitigation

- If a specific mitigation measure is determined to be detrimental to a piece of construction equipment or is determined to be causing significant delays in the construction schedule of the project or the associated linear facilities, the mitigation measure may be terminated immediately. However, notification containing an explanation for the cause of the termination must be sent to the CPM for approval. All such causes are restricted to one of the following justifications and must be identified in any Report of Emergency Termination of Mitigation.

-

1. The measure is excessively reducing normal availability of the construction equipment due to increased downtime for maintenance, and/or power output due to an excessive increase in back pressure.
2. The measure is causing or is reasonably expected to cause significant engine damage.
3. The measure is causing or is reasonably expected to cause a significant risk to nearby workers or the public.
4. Any other seriously detrimental cause which has approval by the CPM prior to the change being implemented.

Verification: The project owner will submit to the CPM for approval the qualifications of the CMM at least 45 days prior to the due date for the Diesel Construction Equipment Mitigation Plan. The project owner will submit the Diesel Construction Equipment Mitigation Plan to the CPM for approval 30 calendar days prior to rough grading on the project site. The project owner will submit the Report of Change and Mitigation Implementation to the CPM for approval no later than 10 working days following the use of the specific construction equipment on either the project site or the associated linear facilities. The project owner will submit a Report of Emergency Termination of Mitigation to the CPM for approval, as required, no later than 10 working days following the termination of the identified mitigation measure. The CPM will monitor the approval of all reports submitted by the project owner in consultation with CARB, limiting the review time for any one report to no more than 20 working days.

AQ-56: Excursion and/or Malfunction

(a) Reporting. The project owner shall notify the APCO by telephone, facsimile, or electronic mail transmission within two (2) working days following the discovery of failure of air pollution control equipment, process equipment, or of a process to operate in a normal manner which results in an increase in emissions above any allowable emission limit stated in this permit. In addition, the APCO shall be notified in writing within fifteen (15) days of any such failure and when the condition causing the failure of breakdown has been corrected and the equipment or process are again in

operation. The notification shall include a description of the malfunctioning equipment or abnormal operation, the date of the initial malfunction, the period of time over which emissions were increased due to the failure, the cause of the failure, the estimated resultant emissions in excess of those allowed, and the methods utilized to mitigate emissions and restore normal operations. Compliance with this malfunction notification provision shall not excuse or otherwise constitute a defense to any violation of this permit or of any law or regulation that such malfunction may cause, except as provided for in AQ-43(b) of this permit.

(b) Treatment of Emissions.

(1) Definition of a malfunction: A malfunction means a sudden and reasonably unforeseeable breakdown of equipment or a process beyond the reasonable control of the source.

(2) Emissions in excess of the limits in this permit shall constitute a violation and may be subject to enforcement conditions.

(3) Affirmative defense: In the context of an enforcement proceeding, emissions which are below the limits set forth in this condition shall not be subject to penalty if the project owner retains properly signed contemporaneous operating logs or other relevant evidence and can demonstrate all of the following:

(i) A malfunction caused the emissions in excess of the limits in this permit

(ii) The emissions did not exceed the following levels:

(iii) 10 ppm NOx (3-hour averaged, corrected to 15% O_2)

(iv) 30 ppm CO (3-hour average, corrected to 15% O_2)

(v) xxx lb/hr NOx (1-hour average)

(vi) xxx lb/hr CO (3-hour average)

(vii) The permitted facility, including the air pollution control equipment and process equipment was being properly operated at the time of the malfunction.

(viii) Preventative maintenance was regularly performed in a manner consistent with good practice for minimizing emissions.

(ix) The malfunction was not caused by improperly or inadequately designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

(x) During the period of the malfunction, the project owner took all reasonable steps to minimize the amount and duration of emissions (including any bypass) that exceed the emission standards in this permit. Reasonable steps to minimize emissions could include, but are not limited to reducing production to the lowest level practicable, reducing the material feed that results in the increased emissions, increasing water injection and ammonia feeds, and switching to alternative, less polluting fuels. Where repairs were required, repairs were made in an expeditious fashion when the operator knew or should have known that applicable emission limitations were being exceeded. Off-shift labor and overtime must have been utilized to the extent practicable to ensure that such repairs were made as expeditiously as possible.

(xi) All emissions, including those associated with a malfunction which may be eligible for an affirmative defense, must be included in all emissions calculations and demonstrations of compliance with mass emission limits in this permit (e.g., daily and annual emission limits).

(xii) This provision is in addition to any emergency or malfunction provision contained in any applicable requirement or elsewhere in this permit.

AQ-57: The measured total dissolved solids (TDS) content of the circulating cooling water shall not exceed 1500 ppm TDS in any month, or 1080 ppm TDS annual average, with a municipal water supply as cooling tower make-up. The use of alternative water supplies will require evaluation of new TDS limits for the cooling tower.

Verification: The project owner shall maintain appropriate measurement data records, and submit the monthly and annual average TDS of the cooling tower circulating water.

AQ-58: The cooling towers drift rate shall not exceed 0.005%. The project owner shall provide a written vendor statement, prior to installation, declaring that the cooling towers mist eliminators used meet the drift criteria stated above.

Verification: At least 30 days prior to the installation of the cooling towers, the project owner shall submit to the BAAQMD a written vendor statement declaring that the drift eliminators to be installed meet the drift rate stated above.

TABLE 1
BEST AVAILABLE FUGITIVE DUST CONTROL MEASURES

FUGITIVE DUST SOURCE CATEGORY	CONTROL ACTIONS
Earth-moving (except construction cutting and filling areas, and mining operations)	Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the CEC CPM. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations each subsequent four-hour period of active operations; OR
	For any earth-moving which is more than 100 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction.
Earth-moving: Construction fill areas:	Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the CEC CPM. For areas which have an optimum moisture content for compaction of less than 12 percent, as determined by ASTM Method 1557 or other equivalent method approved by the CEC CPM, complete the compaction process as expeditiously as possible after achieving at least 70 percent of the optimum soil moisture content. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four-hour period of active operations.
Earth-moving: Construction cut areas and mining operations:	Conduct watering as necessary to prevent visible emissions from extending more than 100 feet beyond the active cut or mining area unless the area is inaccessible to watering vehicles due to slope conditions or other safety factors.
Disturbed surface areas (except completed grading areas)	Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind driven fugitive dust must have an application of water at least twice per day to at least 80 percent of the unstabilized area.
Disturbed surface areas: Completed grading areas	Apply chemical stabilizers within five working days of grading completion; OR
	Take actions (3a) or (3c) specified for inactive disturbed surface areas.
Inactive disturbed surface areas	Apply water to at least 80 percent of all inactive disturbed surface areas on a daily basis when there is evidence of wind driven fugitive dust, excluding any areas which are inaccessible to watering vehicles due to excessive slope or other safety conditions; OR
	Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR
	Establish a vegetative ground cover within 21 days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter; OR
	Utilize any combination of control actions (3a), (3b), and (3c) such that, in total, these actions apply to all inactive disturbed surface areas.
Unpaved Roads	Water all roads used for any vehicular traffic at least once per every two hours of active operations; OR
	Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour; OR
	Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface.
Open storage piles	Apply chemical stabilizers; OR
	Apply water to at least 80 percent of the surface area of all open storage piles on a daily basis when there is evidence of wind driven fugitive dust; OR
	Install temporary coverings; OR
	Install a three-sided enclosure with walls with no more than 50 percent porosity which extend, at a minimum, to the top of the pile.
ALL CATEGORIES	Any other control measures approved by the CEC CPM as equivalent to the methods specified in Table 1 may be used.

TABLE 2
TRACK-OUT CONTROL OPTIONS

(1)	Pave or apply chemical stabilization at sufficient concentration and frequency to maintain a stabilized surface starting from the point of intersection with the public paved surface, and extending for a centerline distance of at least 100 feet and a width of at least 20 feet.
(2)	Pave from the point of intersection with the public paved road surface, and extending for a centerline distance of at least 25 feet and a width of at least 20 feet, and install a track-out control device immediately adjacent to the paved surface such that exiting vehicles do not travel on any unpaved road surface after passing through the track-out control device.
(3)	Any other control measures approved by the CEC CPM as equivalent to the methods specified in Table 2 may be used.

TABLE 3
CONTROL MEASURES FOR WIND CONDITIONS EXCEEDING 25 MPH

FUGITIVE DUST SOURCE CATEGORY	**CONTROL MEASURES**
Earth-moving	Cease all active operations; OR
	Apply water to soil not more than 15 minutes prior to moving such soil.
Disturbed surface areas	On the last day of active operations prior to a weekend, holiday, or any other period when active operations will not occur for not more than four consecutive days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of six months; OR
	Apply chemical stabilizers prior to wind event; OR
	Apply water to all unstabilized disturbed areas 3 times per day. If there is any evidence of wind driven fugitive dust, watering frequency is increased to a minimum of four times per day; OR
	Take the actions specified in Table 1, Item (3c); OR
	Utilize any combination of control actions (1B), (2B), and (3B) such that, in total, these actions apply to all disturbed surface areas.
Unpaved roads	Apply chemical stabilizers prior to wind event; OR
	Apply water twice [once] per hour during active operation; OR
	Stop all vehicular traffic.
Open storage piles	Apply water twice [once] per hour; OR
	Install temporary coverings.
Paved road track-out	Cover all haul vehicles; OR
	Comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.
All Categories	Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 3 may be used.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

AIR QUALITY

APPLICABLE LAW	DESCRIPTION
FEDERAL	
Clean Air Act §111: 42 USC §7411; 40 CFR Part 60, subparts Db and GG	Establishes standards of performance to limit the emission of criteria pollutants for which the EPA has established national ambient air quality standards (NAAWS).
Clean Air Act §112 42 USC §7412; 40 CFR Part 63	Establishes national emission standards to limit hazardous air pollutant (HAP) emissions from existing major sources of HAP emissions in specific source categories.
Clean Air Act §160-169A 42 USC §7470-7491; 40 CFR Parts 51 & 53	Requires pre-construction review and permitting of new or modified major stationary sources of air pollution to prevent significant deterioration of ambient air quality. PSD applies only to pollutants for which ambient concentrations do not exceed the corresponding NAAQS (i.e., attainment pollutants.)
Clean Air Act §171-193 42 USC 501 et seq.; 40 CFR Parts 51 & 52	Requires pre-construction review and permitting of new or modified major stationary sources of air pollution to allow industrial growth without interfering with the attainment of ambient quality standards.
Clean Air Act §401 42 USC 654 et seq.; 40 CFR Part 72	Requires monitoring and reduction of emissions of acidic compounds and their precursors. The principal source of these compounds is the combustion of fossil fuels. Therefore, Title IV established national standards to limits Sox and NOx emissions from electrical power generating facilities.
Clean Air Act §501 (Title V) 42 USC §7661; 40 CFR Part 70	Requires the issuance of operating permits that identify all applicable federal performance, operating, monitoring, record-keeping and reporting requirements. Title V applies to major facilities, acid rain facilities, subject solid waste incinerator facilities, and any facility listed by EPA as requiring a Title V permit.
Clean Air Act 501 (Title V) 42 USC §7414; 40 CFR Part 64	Requires facilities to monitor the operation and maintenance of emissions control systems and report any control system malfunctions to the appropriate regulatory agency.
Emergency Planning and Community Right-to-Know Act § 313 (EPCRA)	EPCRA requires certain facilities and establishments to report toxic releases to the environment if they: 1. Manufacture more than 25,000 lbs. of a listed chemical per year; 2. Process more than 25,000 lbs. of a listed chemical per year; or 3. Otherwise use more than 10,000 lbs. of a listed chemical per year.
STATE	
Health & Safety Code (H&SC) §39500 et seq.	Required by the Clean Air Act, the State Implementation Plan (SIP) must demonstrate the means by which all areas of the state will attain NAAQS within the federally mandated deadlines.
H&SC §40910-40930	The California Clean Air Act requires local Air Pollution Control District's (APCD) to attain and maintain both national and state AAQS at the earliest practicable date.

APPLICABLE LAW AIR QUALITY	DESCRIPTION
H&SC §39650-39675	The Toxic Air Contaminant Identification and Control Act creates a two-step process to identify toxic air contaminants (TAC) and control their emissions. The ARB identifies and prioritizes the pollutants to be considered for identification as Tacos. The ARB then assesses the potential for human exposure to a substance while the Office of Environmental Health Hazard Assessment evaluates the corresponding health effects.
California Public Resources Code §25523(a); 20 CCR §§1752, 1752.5, 2300-2309, and Div. 2 Chap. 5, Art.1, Appendix B, Part(k)	Establishes requirements in the Sec's decision making process on an application for certification that assures protection of environmental quality.
LOCAL	
BAAQMD Regulation 2 Rule 1	Requires an Authority to Construct (ATC and Permit to Operate (PTO) from the air district, as well as the requirement to obtain emission reduction credits.
BAAQMD Regulation 2 Rule 2 – New Source Review (NSR)	Establishes the criteria for siting new and modified emission sources.
BAAQMD Regulation 6-301.	Prohibits visible emissions as dark or darker than No. 1 on the Ringelmann chart.
BAAQMD Regulation 6-310	Limits particulate emissions to 0.15 grains per cubic foot of gas at dry standard conditions (gr/DSCF).
BAAQMD Regulation 9 Rule 9	Limits NO_x emissions to 9ppm at 15% O_2.
BAAQMD Regulation 9 Rule 1.	Limits SO_2 ground-level concentrations and requires monitoring.

This page intentionally blank.

BIOLOGY

	POWER PLANT SITE	CUMULATIVE IMPACTS	LORS COMPLIANCE
Protected Species Impact	None	None	YES
	The power plant site, located within the fenced boundary of the existing Valero Benicia Refinery, is un-vegetated soil and devoid of biological resources. Thus, there will be no on-site biological resource impacts. *References: AFC p. 6.1.3.1.1; 6.1.3.1.2; 6.1.3.4; SA Biological Res., p. 4.2-6.*		
Long-term Habitat Loss/ Degradation	None	None	YES
	By constructing the proposed power plant at an existing, the project will not cause any long-term habitat loss or degradation. *Reference: AFC p. 6.1.3.4.; SA Biological Res., p. 4.2-6.*		
Short-term Construction Disturbance	None	None	YES
	No species or habitat will be disturbed by construction of the project and its associated pipelines and transmission facilities. References: AFC p. 6.13. 13.3.1.4; SA Biological Res., p. 4.2-6-7.		
Operation Impact	None	None	YES
	During operation, the cooling tower will emit drift, a mist containing dissolved solids. The projected drift rate is below that which could cause impact to riparian habitat or agricultural lands. Noise, light, and wastewater discharge resulting from the operation of the project will not impact any species or habitat. *Reference: AFC p. 6.13.3.2.1; SA Biological Res., p. 4.2-9-7.*		

BIOLOGY - GENERAL

The proposed project and ancillary facilities would be constructed within a developed portion of the existing Valero Refinery. This area consists of gravel roads, bare ground (with no vegetation), ornamental iceplant (*Carpobrotus* sp.), ornamental California lilac (*Ceanothus* sp.), and ruderal (weedy) plant species. There are no sensitive plant or animal species on the proposed site, nor are there burrows or other evidence of animal use (including burrowing owls). (AFC p. 6.12-3-4; SA Biological Res., p. 4.2-4.)

Protected Species Impact

The proposed power plant site, laydown areas, and substation are proposed to be located on the existing Valero Refinery site. The proposed facilities will be located on currently gravel-covered areas containing some ornamental vegetation and weedy plants species. The proposed power plant, laydown, and substation sites do not contain any native or sensitive plant species, and no sensitive animal species or their habitat occurs on site. Therefore, no

protected species are impacted by the project. (AFC p. 6.12-3-4; SA Biological Res., p. 4.2-6.)

Long-term Habitat Loss/Degradation

The power plant site is either paved or un-vegetated and has no biological resources. Therefore, as to the site, no habitat resource is being lost or degraded. (AFC p. 6.12-3-4; SA Biological Res., p. 4.2-6.)

Short-term Construction Disturbance

The project site, located within the fenced boundary of the existing refinery, is un-vegetated soil, gravel-covered or paved areas and devoid of biological resources. Thus, there will be no on-site disturbance of biological resources during construction of the power plant or associated pipelines and transmission facilities. (AFC p. 6.12-3-4; SA Biological Res., p. 4.2-6-7.)

Operation Impact

During operation the power plant will emit cooling tower drift which contains dissolved solids, which can be deposited on vegetation. The cooling towers will be located near the center of the refinery site, well away from the Sulfur Springs Creek channel and would not cause a significant impact on any riparian habitat or local vegetation. (AFC p. 6.12-3-4; SA Biological Res., p. 4.2-6.)

Cumulative Impacts

Cumulative impacts are those that 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 change in wastewater quality and quantity is less than significant and not expected to cause a significant cumulative impact to biological resources found in Sulfur Springs Creek or it's tributary, Carquinez Strait, or Suisun Bay. Also, the proposed power plant exhaust stacks will not be a prominent obstacle for bird species and, therefore, should not cause an increase in bird collisions or represent an impediment to bird movements. The anticipated project noise increase, when considered with other current noise levels, should be insignificant and not contribute to any cumulative noise/wildlife noise concern.

There are no natural habitats remaining on the proposed facility site. The closest area of natural habitat is the Sulfur Springs Creek and its tributary, which lie on the northern boundary of the Valero Refinery. All project-related disturbances will be limited to already-

disturbed areas, and those undisturbed areas directly adjacent to the proposed project are unlikely to be significantly affected. For these reasons, the proposed project is not expected to cause adverse habitat impacts, when considered in conjunction with other similar development projects in the region, and therefore should not have any cumulative biological resource impacts. (AFC p. 6.12-3-4; SA Biological Res., p. 4.2-9.)

Findings

The project conforms with applicable laws related to biological resources, and there are no potentially significant adverse impacts to biological resources.

CONDITIONS OF CERTIFICATION

None

LAWS, ORDINANCES, REGULATIONS & STANDARDS

BIOLOGY

APPLICABLE LAW	DESCRIPTION
FEDERAL	
Endangered Species Act of 1973 (16 USC, Section 1531 et seq.) and implementing regulations, (CFR, Section 17.1 et seq.)	Designates and provides for protection of threatened and endangered plants and animals and their critical habitat.
National Environmental Policy Act (NEPA) of 1969 (42 USC 4341 et seq.) and implementing regulations (40 CFR Parts 1500-1508)	NEPA must be addressed if an Environmental Impact Statement (EIS) would be required for a Federal action/permit that would have a significant effect on the environment.
Section 404 of the Clean Water Act (33 USC Section 404 et seq.)	Prohibits the discharge of dredged or fill material into waters of the United States without a permit. A 404 Nationwide permit 12 is applicable for utility line placement near waters of the U.S. causing temporary discharge of material.
Executive Order 11990, Protection of Wetlands	Requires governmental agencies take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out their responsibilities.
STATE	
California Endangered Species Act of 1984, (Fish and Game Code, Section 2050 et seq.)	Protect California's endangered and threatened species.
Streambed Alteration Agreement (Fish and Game Code Section 1603)	Requires the Department to review any project planning to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake prior to commencement.

CULTURAL RESOURCES

	POWER PLANT SITE	CUMULATIVE IMPACTS	LORS COMPLIANCE
Cultural Resources Á **Prehistorical** Á **Historical** Á **Ethnic Heritage**	**MITIGATION**	**None**	**YES**
	Construction: There are no known prehistoric resources, historical resources, or human remains at the highly disturbed power plant site in the existing refinery. A military ammunition bunker of the historic Benicia Arsenal, located near the transmission route, was irrevocably altered during construction of the refinery in 1969 and is not eligible for historical designation. At most, there is a low potential for discovery of some unknown resource during construction. **MITIGATION:** X The Project Owner will designate a cultural resource specialist who will monitor excavation and, in the event of an unanticipated discovery, provide for the handling and curation of any recovered cultural resources. Conditions: **CULT-1** through **CULT-8.** *References: AFC p. 6.2; SA Cultural Resources pp. 4.3-4-6.*		

CULTURAL RESOURCES- GENERAL

This analysis discusses cultural resources, which are defined as the structural and cultural evidence of the history of human development and life on earth. Cultural resources may be found on the ground surface or buried beneath the surface. Evidence of California's early occupation is becoming increasingly vulnerable due to the ongoing development and urbanization of the state. Potential cultural resources are identified through records searches and filed surveys.

Since project development and construction usually entail surface and sub-surface disturbance of the ground, the proposed project has the potential to adversely affect both known and unknown cultural resources. Direct impacts are those which may result from the immediate disturbance of resources, whether from vegetation removal, vehicle travel over the surface, earth-moving activities, or excavation. Indirect impacts are those which may result from increased erosion due to site clearance and preparation, or from inadvertent damage or outright vandalism to exposed resource materials due to improved accessibility. Cumulative impacts to cultural resources may occur if increasing amounts of land are cleared and disturbed for the development of multiple projects in the same vicinity as the proposed project.

However, due to the extreme local topographical alteration associated with terracing in the site area for the ammunition dump and later refinery, the potential for undiscovered resources to be present at the power plant site appears to be very slight.

Prehistoric

Prehistoric archaeological resources are those resources relating to prehistoric human occupation and use of an area; these resources may include sites and deposits, structures, artifacts, rock art, trails, and/or any other traces of Native American human behavior. In California, the prehistoric period has been determined to pre-date 10,000 years before present (B.P.) and which extended well into the 18th century with the initiation of the Mission Period (ca. 1769) and the first Euro-American (Spanish) settlement of California.

The earliest known sites in this region date to about 5,000 years ago. Sites from earlier periods are probably buried under alluvial deposition brought on by warmer Holocene conditions and rising sea and stream levels. Sites dating to 2,500 years ago signal the start of substantial population growth and movement in the region. The Augustine Pattern represents the archaeological signature of Late Period Wintuan peoples such as the Patwin of the Suisun Bay area. Augustine sites are marked by arrow points, harpoons, shell beads, and ceramic items.

The Patwin were organized into politically independent tribelets, each anchored by a permanent village and a number of smaller camps, most located along perennial streams. The Patwin were hunter-gatherer-fishers who depended on seasonably available plant foods (chiefly acorns) and a range of terrestrial and riverine animals. Salmon and sturgeon were caught with weirs; smaller fish were netted or speared. Hunters sought deer, elk, antelope, waterfowl, and turtles. Freshwater shellfish were collected along the edges of streams. Patwin material culture featured skillful basketry; tule balsa boats; flaked and ground stone tools; and items fashioned from shell, wood, and bone (Johnson 1978). Archaeologically, prehistoric habitation sites would most likely be found along rivers and streams, with short-term camps and activity locations possible in any areas not subject to inundation. (AFC p. 6.1-2,3; SA Cultural Resources, pp. 4.3-3.)

The proposed power plant location yielded no physical evidence of prehistoric resources.

Historic

Historic archaeological resources are those materials usually associated with Euro-American exploration and settlement and the beginning of written historical records. Historic resources may also include archaeological deposits, sites, structures, traveled ways, artifacts, documents, and/or any other evidence of human activity. Prior to 1998, federal and state requirements identified historic resources as being greater than fifty years of age. Amendments to CEQA have removed the references to the fifty-year designation, while the federal regulations maintain the requirement.

Benicia was established on General Vallejo's Rancho Suscol. Founded in 1847, Benicia had become a successful Gold Rush port by the time Solano County was created in 1850 and briefly served as the state's third capitol during 1853-54. A garrison established by the U.S. Army in 1849 was expanded as the Benicia Arsenal in 1851. Although the garrison closed in 1898, the Benicia Arsenal remained active for more than 100 years (Marschner 2000).

Benicia's commercial industry was exemplified by the Turner/Robertson shipyard, which constructed 228 vessels between 1882 and 1918. The area around Benicia remains mostly industrial today. Archaeological sites from the historical period that could be significant would include subsurface physical remains associated with nineteenth century residences, military facilities, and commercial structures.

A cultural resources records search indicated that no properties with above-ground resources of historic age have been identified within one-half mile of the power plant site and transmission line. The historic Benicia Arsenal (California Historical Landmark No. 176) is located in the hills outside the Valero Refinery, just beyond the one-half mile radius. The Benicia Arsenal has been evaluated as eligible for the National Register of Historic Places, according to the Office of Historic Preservation's Historic Property Data File, but will not be affected by the project.

One potential historic resource was identified near the electrical transmission line route following the applicant's field survey. A military ammunition bunker that is more than 50 years old is located on the south side of Avenue F within the restricted access portion of the Valero Refinery property. The historic setting of the bunker was irrevocably altered when the Valero Refinery was constructed around it in 1969. The bunker has been evaluated as not eligible for the California Register of Historical Resources or National Register of Historic Places under Criterion C because it has no distinctive architectural characteristics and is one of many such bunkers on military properties in the region. The bunker has been evaluated as not eligible under any other criteria of the California Register or National Register. (AFC pp. 6.1-3,4; SA Cultural Resources, pp. 4.3-4-5.)

Ethnic Heritage

Ethnographic resources are those resources important to the heritage of a particular ethnic or cultural group, such as Native Americans, Hawaiian, Eskimo, African, European, or Asian immigrants. They may include traditional resource collecting areas, ceremonial sites, topographic features, cemeteries, shrines, or ethnic neighborhoods and structures. Ethnographic resources also include personal biographical data, interview data, and collections or oral histories relating the lifeways of previous generations.

No Native American cultural resource sites have been identified by the Native American Heritage Commission or other Native American representatives. (AFC p. 6.1-4.) No human remains have been identified within the project area. However, should such resources be identified, the local Native American representatives must be contacted (following notification to the County Coroner) and all requirements of state and federal law, as appropriate. (AFC p. 6.1-7.)

MITIGATION:

X The Project Owner will designate a cultural resource specialist who will monitor excavation and, in the event of an unanticipated discovery, provide for the handling and curation of any recovered cultural resources. Conditions: **CULT-1** through **CULT-8.**

Cumulative Impacts

The potential for cumulative impacts may be associated with the degree of prehistoric and historic sensitivity. The site is in an area sensitive for cultural resources, especially historical resources. There are no known additional projects being constructed within the proposed project area. Therefore, potential cumulative impacts are not significant. (AFC p. 6.1-7.)

Finding

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to water resources and all potential water resource impacts will be mitigated to insignificance.

CONDITIONS OF CERTIFICATION

DESIGNATED CULTURAL RESOURCES SPECIALIST

CUL-1: Prior to the start of ground disturbance, the project owner shall provide the California Energy Commission (Commission) Compliance Project Manager (CPM) with the name and statement of qualifications for its Cultural Resources Specialist (CRS), and one alternate CRS, if an alternate is proposed, who will be responsible for implementation of all cultural resources Conditions of Certification.

Protocol: The statement of qualifications for the CRS and alternate shall include all information needed to demonstrate that the CRS meets the minimum qualifications specified in the U.S. Secretary of Interior Guidelines, as published by the State Office of Historic Preservation (1983). The minimum qualifications include the following:

1) a graduate degree in anthropology, archaeology, California history, cultural resource management, or a comparable field;
2) at least three years of archaeological resource mitigation and field experience in California; and
3) at least one year's experience in each of the following areas:
    a) leading archaeological resource field surveys;
    b) leading site and artifact mapping, recording, and recovery operations;
    c) marshalling and use of equipment necessary for cultural resource recovery and testing;
    d) preparing recovered materials for analysis and identification;
    e) determining the need for appropriate sampling and/or testing in the field and in the lab;
    f) directing the analyses of mapped and recovered artifacts;
    g) completing the identification and inventory of recovered cultural resource materials; and

h) preparing appropriate reports to be filed with the receiving curation repository, the State Historic Preservation Office, all appropriate regional archaeological information center(s).

The statement of qualifications for the CRS shall include:

1) a list of specific projects the CRS has previously worked on;
2) the role and responsibilities of the CRS for each project listed; and
3) the names and phone numbers of contacts familiar with the CRS's work on these referenced projects.

Verification: At least forty-five days prior to the start of ground disturbance, the project owner shall submit the name and statement of qualifications of its CRS and alternate CRS, if an alternate is proposed, to the CPM for review and approval.

At least ten days, prior to the start of construction, the project owner shall confirm in writing to the CPM that the approved CRS will be available at the start of construction and is prepared to implement the cultural resources Conditions of Certification.

At least ten days prior to the termination or release of the CRS, the project owner shall obtain CPM approval of the replacement CRS by submitting to the CPM the name and resume of the proposed new CRS.

PROJECT MAPS SHOWING GROUND DISTURBANCE

CUL-2: Prior to the start of ground disturbance, the project owner shall provide the designated cultural resources specialist and the CPM with maps and drawings showing the footprint of the power plant and all linear facilities. Maps provided will include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:2000 or 1" = 200') for plotting individual artifacts. If the designated cultural resource specialist requests enlargements or strip maps for linear facility routes, the project owner shall provide them. In addition, the project owner shall provide a set of these maps to the CPM at the same time that they are provided to the specialist. If the footprint of the power plant or linear facilities changes, the project owner shall provide maps and drawings reflecting these changes, to the cultural resources specialist and the CPM within five days. Maps shall show the location of all areas where surface disturbance may be associated with project-related access roads, and any other project components.

Verification: At least forty days prior to the start of earth disturbing activities on the project, the project owner shall provide the designated cultural resources specialist and the CPM with the maps and drawings. Copies of maps or drawings reflecting changes to the footprint of the power plant and/or linear facilities shall be submitted to the cultural resources specialist and the CPM within five days of the changes.

CULTURAL RESOURCE MONITORING

CUL-3: Cultural Resource monitoring shall be conducted during the initial groundbreaking at the plant site and at the underground power lines. The potential for encountering undisturbed soils shall be assessed by the CRS based on the initial groundbreaking observations. If the initial assessment indicates that undisturbed soils exist within the plant

site or in the area of the underground power lines, then periodic cultural resource monitoring shall continue until the CRS determines that no cultural resources will be impacted.

Verification: Within 2 days of initial groundbreaking, the CRS or alternate CRS will provide a letter (electronic or paper) to the CPM and the project owner of the assessment of the initial groundbreaking observations, including recommendations of any areas that shall require additional monitoring. If additional monitoring is required, resumes of individuals conducting the monitoring, if other than the CRS or alternate CRS, shall be provided to the CPM with the assessment letter. When all monitoring has been completed, the CRS shall provide a letter to the CPM and the project owner indicating that the CRS has determined that no cultural resources will be impacted.

DESIGNATED CULTURAL RESOURCE SPECIALIST AUTHORITY

CUL-4: The CRS, alternate CRS and the Cultural Resources Monitor(s) shall have the authority to halt or redirect construction if previously unknown cultural resource sites or materials are encountered or if known resources may be impacted in a previously unanticipated manner.

If such resources are found, the halting or redirection of construction shall remain in effect until all of the following have occurred:

a. the CRS has notified the CPM and the project owner of the find and the work stoppage;
b. the CRS, the project owner, and the CPM have conferred and determined what, if any, data recovery or other mitigation is needed; and
c. any necessary data recovery and mitigation has been completed.

If data recovery or other mitigation measures are required, the CRS and/or the alternate CRS and cultural resource monitor(s), including Native American monitor(s), shall monitor these data recovery and mitigation measures, as needed.

For any cultural resource encountered, the project owner shall notify the CPM within 24 hours after the find.

All required data recovery and mitigation shall be completed expeditiously unless all parties agree to additional time.

Verification: At least thirty days prior to the start of ground disturbance, the project owner shall provide the CPM with a letter confirming that the CRS, alternate CRS and Cultural Resources Monitor(s) have the authority to halt construction activities in the vicinity of a cultural resource find and stating that the CRS will notify the CPM and project owner within 24 hours after a find.

DESIGNATED CULTURAL RESOURCE SPECIALIST DUTIES

CUL-5: Prior to the start of ground disturbance, and each week throughout project ground disturbance, the project owner shall provide the CRS with a current schedule of anticipated project activity in the following month and a map indicating the area(s) where the construction

activities will occur until the CRS has determined that no cultural resources will be impacted. The CRS shall consult weekly with the project superintendent or construction field manager to confirm the area(s) to be worked during the next week, until the CRS has determined that no cultural resources will be impacted.

Verification: In each Monthly Compliance Report, until the CRS has determined that no cultural resources will be impacted, the project owner shall include a brief report by the CRS regarding construction activities.

CULTURAL RESOURCE RECOVERY

CUL-6: If discoveries are made during project construction, the project owner shall ensure that the CRS performs the recovery, preparation for analysis, analysis, preparation for curation, and delivery for curation of all cultural resource materials encountered and collected during data recovery, mapping, and mitigation activities related to the project.

Verification: If discoveries are made during project construction, the project owner shall maintain in its compliance files, copies of signed contracts or agreements with the museum(s), university (ies), or other appropriate research specialists. The project owner shall maintain these files for the life of the project and the files shall be kept available for periodic audit by the CPM. Information as to the specific location of sensitive cultural resources shall be kept confidential and accessible only to qualified cultural resource specialists.

CULTURAL RESOURCES REPORT – SCOPE OF WORK

CUL-7: After completion of the project, the project owner shall ensure that the CRS prepares a Cultural Resource Report (CRR) according to Archaeological Resource Management Reports (ARMR) Guidelines as recommended by the California Office of Historic Preservation. The project owner shall submit the report to the CPM for review and approval. The report shall be considered final upon approval by the CPM.

1 The CRR shall include (but not be limited to) the following:
   a. For all projects:
      1) description of pre-project literature search, surveys, and any testing activities;
      2) maps showing areas surveyed or tested;
      3) description of any monitoring activities;
      4) maps of any areas monitored; and
      5) conclusions and recommendations.
   b. For projects in which cultural resources were encountered, include the items specified under “a” and also provide:
      1) site and isolated artifact records and maps;
      2) description of testing for, and determinations of, significance and potential eligibility; and
      3) research questions answered or raised by the data from the project.

c. For projects regarding which cultural resources were recovered, include the items specified under “a” and “b” and also provide:
   1) descriptions (including drawings and/or photos) of recovered cultural materials;
   2) results and findings of any special analyses conducted on recovered cultural resource materials;
   3) an inventory list of recovered cultural resource materials; and
   4) the name and location of the public repository receiving the recovered cultural resources for curation.

Verification: After completion of the project, the project owner shall ensure that the CRS completes the CRR within ninety days following completion of the analysis of the recovered cultural materials. Within seven days after completion of the report, the project owner shall submit the CRR to the CPM for review and approval. Within 30 days after receiving approval of the CRR, the project owner shall provide to the CPM documentation that the report has been sent to the public repository receiving the recovered data and materials for curation, the SHPO and the appropriate archaeological information center(s).

CULTURAL RESOURCES REPORT DISTRIBUTION

CUL-8: Following the filing of the CPM-approved CRR with the appropriate entities, the project owner shall ensure that all cultural resource materials, maps, and data collected during data recovery and mitigation for the project are delivered to a public repository that meets the US Secretary of Interior requirements for the curation of cultural resources. The project owner shall pay any fees for curation required by the repository.

Verification: The project owner shall ensure that all recovered cultural resource materials are delivered for curation within thirty days after providing the CPM-approved CRR.

For the life of the project, the project owner shall maintain in its compliance files copies of signed contracts or agreements with the public repository to which the project owner has delivered for curation all cultural resource materials collected during data recovery and mitigation for the project.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

CULTURAL RESOURCES

APPLICABLE LAW	DESCRIPTION
FEDERAL	
National Historic Preservation Act 916 USC 470, et seq.)	Applicable if federal permits are required, Federal funding provided, or lands owned by Federal government. Requires consultation with lead Federal agency, SHPO, & Advisory Council on Historic Preservation.
36 CFR 61 Appendix A	Professional qualification standards/procedures for state and local government historic preservation programs/cultural resources management.
STATE	
California Environmental Quality Act (CEQA) Guidelines (Sections 15064.5 & 15126.4)	Construction may encounter archaeological resources.
Health & Safety Code 7050.5	If Native Americans graves encountered, coroner calls Native American Heritage Commissioner.
Public Resources Code Section 5097.9	If Native American graves are encountered, Native American Heritage Commissioner assigns most likely descendent.

This page intentionally blank.

GEOLOGY

	POWER PLANT SITE	CUMULATIVE IMPACTS	LORS COMPLIANCE
Earthquake	MITIGATION	None	YES
	The project is located in seismic zone 4 and is 2 miles west of the Concord-Green Valley fault. The power plant will be designed and constructed to withstand strong earthquake shaking as specified in the 1998 California Building Code for seismic zone 4. See **FACILITY DESIGN**. **MITIGATION:** X The Project Owner shall prepare an Engineering Geology Report pursuant to the California Building Code to fully describe the geologic conditions of the power plant site. Condition: **GEO-1**. *References: AFC App. K; SA Geology, etc., p. 5.2-3.*		
Instability	MITIGATION	None	YES
	Since alluvial clay-rich soils in the project area are underlain by bedrock, there is a negligible potential of liquefaction. However, clay-rich soils are subject to expansion in the presence of water. Excavation of cut slopes will include clay-rich soils, requiring verification of cut slope stability. The potential for landslide and subsidence is negligible. **MITIGATION:** X The Project Owner shall verify the integrity of cut slopes. Condition: **GEO-2**. X The Project Owner shall design all structures to resist the effects of expansive soils. Condition: **GEO-3**. *Reference: AFC App. K; SA Geology, etc., p. 5.2-3, 4.*		
Mineral Resources	None	None	YES
	There are no known geologic resources at the power plant site. *References: SA Geology, etc., p. 5.2-5.*		
Fossils (Paleontology)	MITIGATION	None	YES
	There are no known paleontological resources at the power plant site. Procedures need to be in place in the event of an unanticipated discovery of paleontological resources during site excavation. **MITIGATION:** X Procedures for the recovery of unknown paleontological resources at the power plant site will prevent a significant impact to paleontological resources. Conditions: **PAL-1** to **PAL-6**. *References: AFC p. 6.15-11; SA Geology, etc., p. 5.2-5.*		
Flood	None	None	YES
	The power plant elevation is 110 feet above mean sea level and not subject to inundation from tsunami. *Reference: AFC p. 6.17.1.4; SA Geology, etc.,5.2 p. 4.*		

GEOLOGY – GENERAL

The proposed project is located within the California Coastal Range geomorphic province. This area is characterized by elevated topography with northwest-trending ridges, valleys, and faults. Two geologic units are generally present in the vicinity of the site and include the Franciscan Complex and the Great Valley Complex (California Division of Mines and Geology [CDMG], 1982). The Franciscan Complex consists of metamorphosed oceanic crustal rocks and marine sediments. The metamorphosed oceanic crustal rocks form the lower plate of a complex system of thrust faults known as the Coast Range Thrust. The Great Valley Complex consists of sedimentary rocks that were deposited in a continental slope marine environment, is located on the upper plate of the Coast Range Thrust, and forms much of the eastern flank of the Coast Range.

Exploration at the site generally encountered various depths of fill, colluvium, alluvial fan and fluvial deposits, and bedrock of the Great Valley Complex. The fill materials consist of stiff to very stiff sandy clay materials, which were generated by cutting into native bedrock. Where present, the thickness of the fill varies from 18 to 53 feet, and this material is considered moderately to highly expansive. The colluvium, which overlies site bedrock, is approximately 6-feet-thick and consists of a clay-rich unit (stiff to very stiff clay and sandy clay), which has developed as an in-place weathering product of the underlying bedrock, and has subsequently been subject to downslope movement by soil creep and slope movement. This material is considered moderately to highly expansive. The alluvial fan and fluvial deposits are of Pleistocene age and consist of dense clayey sand/sandy clay with varying amounts of gravel. The underlying bedrock is part of the Great Valley Complex and consists of sandstone and shale of Cretaceous age. This material is described as fractured, weathered, weak, and moderately consolidated interbedded sandstone and mudstone.

Grading at the site will involve cuts up to approximately 15 feet along the western site perimeter, which will remove a majority of the fill materials. Retaining walls will be constructed along western and northern perimeters to maximize plant pad size and provide a relatively level pad on which to construct the proposed facility. The materials expected to be exposed by such grading operations will exhibit moderate to high expansion potential such that mitigation of such materials will be necessary. A 2H:1V (Horizontal:Vertical) slope is planned along the southern perimeter. (AFC p. 6.16-1,2; SA Geology, etc., p. 2.)

Earthquake

The project is located within seismic zone 4 as delineated on Figure 16-2 of the 1998 edition of the California Building Code. Energy Commission staff reviewed the California Division of Mines and Geology publication “Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions,” dated 1994 (CDMG 1994). No known faults cross the proposed site or proposed linear facility improvements. The closest known active fault is the Concord-Green Valley Fault, located approximately 2 miles east of the site. The estimated peak horizontal ground acceleration for the project is on the order of 0.6g. This estimate is based upon a moment magnitude 6.9 earthquake on the Concord-Green Valley Fault, approximately 2 miles east of the site. (AFC App. K; SA Geology, etc., p. 5.2-3.)

MITIGATION:

- X The Project Owner shall prepare an Engineering Geology Report pursuant to the California Building Code to fully describe the geologic conditions of the power plant site. Condition: **GEO–1.**

Instability

Liquefaction is a nearly complete loss of soil shear strength that can occur during a seismic event. 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. Soil borings contained in the AFC indicate ground water is present at depths as shallow as 8 feet below existing grade based on measurements made in 1989 (VALERO, 2001a, Appendix K, Plates 2 through 8). The borings also indicate the site is underlain by surficial clay soils overlying native bedrock, which consists of mudstone and sandstone. As a result, the potential for liquefaction and associated lateral spreading of site soils is negligible.

Dynamic compaction of soils results when relatively unconsolidated granular materials experience vibration associated with seismic events. 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 clay soils overlying native bedrock, the potential for dynamic compaction is negligible.

Ground subsidence is typically caused when ground water is drawn down by irrigation activities 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. Since ground water is generally present at the clay soil/bedrock interface, since the bedrock can be considered relatively incompressible, and since the minor amount of water usage (0.28 million gallons per day) will be accommodated by the existing City of Benicia facilities, the potential for ground subsidence is considered 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 that, in turn, causes an increase in the overall volume of the soil. This increase in volume can correspond to movement of overlying structural improvements. The site soils and bedrock are known to exhibit a moderate to high potential to expand with an increase in moisture content. As a result, mitigation of clay soils will be necessary.

Landslides typically involve rotational slump failures within surficial soils/colluvium and/or weakened bedrock that are usually implemented by an increase of the material's moisture content above a layer which exhibits a relatively low strength. Debris-flows are shallow landslides that travel downslope very rapidly as muddy slurry. Energy Commission staff have reviewed the relative landslide and debris-flow susceptibility maps (CDMG, 1987) for this area. Based on the information contained in this publication, the area is considered marginally susceptible to landslides and debris-flows; however, no landslides or debris-flows are shown as existing within the limits of the project. As a result and based on the site geology as presented in the AFC and supplemental AFC, the potential for landslides and debris-flows at the site is considered low.

Tsunamis and Seiches are earthquake-induced waves that inundate low-lying areas adjacent to large bodies of water. The proposed site is situated approximately 110 feet above mean sea level and approximately 7,000 lineal feet northwest of the Carquinez Straight. As a result and based on the information contained in the AFC, the potential for tsunamis and Seiches to affect the site is considered negligible. (AFC App. K; SA Geology, etc., pp. 5.2-3, 4.)

MITIGATION:

- X The Project Owner shall verify the integrity of cut slopes. Condition: **GEO–2**. The Project Owner shall design all structures to resist the effects of expansive soils. Condition: **GEO–3**.

Mineral Resources

Energy Commission staff have reviewed applicable maps of thermal springs and wells for this area (CDMG, 1982). Based on this information and the information contained in the AFC (VALERO, 2001a; and URS, 2001b and c), there are no known geological or mineralogical resources located at or immediately adjacent to the proposed expansion site. (SA Geology, etc., p. 5.2-4.)

Fossils - Paleontology

A paleontological resources field survey and sensitivity analysis were conducted by the applicant's consultant for the proposed power plant expansion and the proposed linear facility improvements to support the expansion. No significant fossil fragments were identified. The proposed expansion site has been disturbed in the past and is not likely to contain significant paleontological resources in-situ. Notwithstanding the absence of evidence of paleontological resources through field surveys or literature searches, there is the potential that unknown paleontological resources may be encountered during excavation and other construction activities. (AFC p. 6.15-11; SA Geology, etc., p. 5.2-5.)

MITIGATION:

- X The Project Owner will designate a paleontological resource specialist who will prepare a paleontological resource recovery plan, provide resource identification

training to employees, monitor excavation, and provide for the handling and curation of any recovered paleontological resources. Conditions: **PAL-1** through **PAL–6**.

Floods

The site is on a rise of land west of a southeast-trending valley that divides the Valero refinery. This valley contains alluvium and fill and drains towards Carquinez Strait. The site elevation is about 110 feet above mean sea level. The closest bodies of water to the project site are the Carquinez Strait, approximately 7,000 feet to the southeast and Lake Herman, approximately the same distance to the northwest. Flooding is unlikely based on the elevation differential between the site and the valley that would be inundated.

Cumulative Impacts

The power plant site is not known to have significant geologic resources. The mitigation measures for this project will effectively reduce potential direct, indirect, and cumulative impacts of this project to insignificance. (AFC p. 6.15-11; SA Geology, etc., p. 5.2-7.)

Findings

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to geological and paleontological resources, all potential adverse impacts to geologic and paleontological resources will be mitigated to insignificance, and the public is not exposed to geological hazards.

CONDITIONS OF CERTIFICATION

DESIGNATED ENGINEERING GEOLOGIST

GEO-1: Prior to the start of construction, the project owner shall assign to the project an engineering geologist(s), certified by the State of California, to carry out the duties required by the CBC Appendix Chapter 33, Section 3309.4. The certified engineering geologist(s) assigned must be approved by the CPM. The functions of the engineering geologist can be performed by the responsible geotechnical engineer, if that person has the appropriate California license.

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CPM) prior to the start of construction, the project owner shall submit to the CPM for approval the name(s) and license number(s) of the certified engineering geologist(s) assigned to the project. The submittal should include a statement that CPM approval is needed. The CPM will approve or disapprove of the engineering geologist(s) and will notify the project owner of its findings within 15 days of

receipt of the submittal. If the engineering geologist(s) is subsequently replaced, the project owner shall submit for approval the name(s) and license number(s) of the newly assigned individual(s) to the CPM. The CPM will approve or disapprove of the engineering geologist(s) and will notify the project owner of the findings within 15 days of receipt of the notice of personnel change.

ENGINEERING GEOLOGIST DUTIES

GEO-2: The assigned engineering geologist(s) shall carry out the duties required by the 1998 CBC, Appendix Chapter 33, Section 3309.4 Engineered Grading Requirement, and Section 3318.1 – Final Reports. Those duties are:

1. Prepare the Engineering Geology Report. This report shall accompany the Plans and Specifications when applying to the CBO for the grading permit.
2. Monitor geologic conditions during construction. In particular, examine cut slopes for adverse dipping of bedding planes.
3. Prepare the Final Engineering Geology Report.

Protocol: The Engineering Geology Report required by the 1998 CBC Appendix Chapter 33, Section 3309.3 Grading Designation, shall include an adequate description of the geology of the site, conclusions and recommendations regarding the effect of geologic conditions on the proposed development, and an opinion on the adequacy of the site for the intended use as affected by geologic factors.

The Final Engineering Geology Report to be completed after completion of grading, as required by the 1998 CBC Appendix Chapter 33, Section 3318.1, shall contain the following: A final description of the geology of the site and any new information disclosed during grading and the effect of same on recommendations incorporated in the approved grading plan. The engineering geologist shall submit a statement that, to the best of his or her knowledge, the work within their area of responsibility is in accordance with the approved Engineering Geology Report and applicable provisions of this chapter.

Verification: (1) Within 15 days after submittal of the application(s) for grading permit(s) to the CBO, the project owner shall submit a signed statement to the CPM stating that the Engineering Geology Report has been submitted to the CBO as a supplement to the plans and specifications and that the recommendations contained in the report are incorporated into the plans and specifications. (2) Within 90 days following completion of final grading, the project owner shall submit copies of the Final Engineering Geology Report required by the 1998 CBC Appendix Chapter 33, Section 3318, Completion of Work, to the CBO, and to the CPM on request.

EXPANSIVE SOIL MITIGATION

GEO-3: Chapter 18 of the CBC requires all structures to be designed to resist the effects of expansive soils. Since expansive soils are present at this site, mitigation of such soils will be necessary.

Verification: Prior to the start of construction, the project owner shall submit to the CPM an updated geotechnical report, which includes all laboratory test data and engineering calculations in support of recommended mitigation procedures for expansive soils at this site.

DESIGNATED PALEONTOLOGICAL RESOURCES SPECIALIST

PAL-1: Prior to the start of any project-related construction activities (defined as any construction-related vegetation clearance, ground disturbance and preparation, and site excavation activities), the project owner shall ensure that the designated paleontological resource specialist approved by the CPM is available for field activities and prepared to implement the conditions of certification.

The designated paleontological resources specialist shall be responsible for implementing all the paleontological conditions of certification and for using qualified personnel to assist in this work.

Protocol: The project owner shall provide the CPM with the name and statement of qualifications for the designated paleontological resource specialist.

The statement of qualifications for the designated paleontological resources specialist shall demonstrate that the specialist meets the following minimum qualifications: a degree in paleontology or geology or paleontological resource management and at least three years of paleontological resource mitigation and field experience in California, including at least one year's experience leading paleontological resource mitigation and field activities.

The statement of qualifications shall include a list of specific projects the specialist has previously worked on; the role and responsibilities of the specialist for each project listed; and the names and phone numbers of contacts familiar with the specialist's work on these referenced projects.

If the CPM determines that the qualifications of the proposed paleontological resource specialist do not satisfy the above requirements, the project owner shall submit another individual's name and qualifications for consideration.

If the approved, designated paleontological resource specialist is replaced prior to completion of project mitigation, the project owner shall obtain CPM approval of the new designated paleontological resource specialist by submitting the name and qualifications of the proposed replacement to the CPM, at least ten (10) days prior to the termination or release of the preceding designated paleontological resource specialist.

Should emergency replacement of the designated specialist become necessary, the project owner shall immediately notify the CPM to discuss the qualifications of its proposed replacement specialist.

Verification: At least sixty (60) days prior to the start of construction (or a lesser number of days mutually agreed to by the project owner and the CPM), the project owner shall submit the name, statement of qualifications, and the availability for its designated paleontological resource specialist, to the CPM for review and approval. The CPM shall approve or disapprove of the proposed paleontological resource specialist.

At least ten (10) days prior to the termination or release of a designated paleontological resource specialist, the project owner shall obtain CPM approval of the replacement specialist by submitting to the CPM the name and resume of the proposed new designated paleontological resource specialist. Should emergency replacement of the designated specialist become necessary, the project owner shall immediately notify the CPM to discuss the qualifications of its proposed replacement specialist.

PALEONTOLOGICAL RESOURCES MONITORING & MITIGATION PLAN

PAL-2: Prior to the start of project construction, the designated paleontological resource specialist shall prepare a Paleontological Resources Monitoring and Mitigation Plan to identify general and specific measures to minimize potential impacts to sensitive paleontological resources, and submit this plan to the CPM for review and approval. After CPM approval, the project owner's designated paleontological resource specialist shall be available to implement the Monitoring and Mitigation Plan, as needed, throughout project construction.

Protocol: The project owner shall develop a Paleontological Resources Monitoring and Mitigation Plan in accordance with the guidelines of the Society of Vertebrate Paleontologists (SVP, 1994) that shall include, but not be limited to, the following elements and measures:

- A discussion of the sequence of project-related tasks, such as any pre-construction surveys, fieldwork, flagging or staking; construction monitoring; mapping and data recovery; fossil preparation and recovery; identification and inventory; preparation of final reports; and transmittal of materials for curation;
- Identification of the person(s) expected to assist with each of the tasks identified within this condition for certification, a discussion of the mitigation team leadership and organizational structure, and the inter-relationship of tasks and responsibilities;
- Where monitoring of project construction activities is deemed necessary, the extent of the areas where monitoring is to occur and a schedule for the monitoring;
- An explanation that the designated paleontological resource specialist shall have the authority to halt or redirect construction in the immediate vicinity of a vertebrate fossil find until the significance of the find can be determined;

- A discussion of equipment and supplies necessary for recovery of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;
- Inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum, which meets the Society of Vertebrate Paleontologists standards and requirements for the curation of paleontological resources; and
- Identification of the institution that has agreed to receive any data and fossil materials recovered during project-related monitoring and mitigation work, discussion of any requirements or specifications for materials delivered for curation and how they will be met, and the name and phone number of the contact person at the institution.
- At least forty-five (45) days prior to the start of construction (or a lesser number of days mutually agreed to by the project owner and the CPM), the project owner shall provide the CPM with a copy of the Paleontological Resources Monitoring and Mitigation Plan prepared by the designated paleontological resource specialist for review and approval. If the plan is not approved, the project owner, the designated paleontological resource specialist, and the CPM shall meet to discuss comments and negotiate necessary changes.

WORKER PALENTEOLOGICAL RESOURCES AWARENESS PROGRAM

PAL-3: Prior to the start of construction and throughout the project construction period as needed for all new employees, the project owner and the designated paleontological resource specialist shall prepare, and the owner shall conduct, CPM-approved training to all project managers, construction supervisors, and workers who operate ground disturbing equipment. The project owner and construction manager shall provide the workers with the CPM-approved set of procedures for reporting any sensitive paleontological resources or deposits that may be discovered during project-related ground disturbance.

Protocol: The paleontological training program shall discuss the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources.

The training shall also include the set of reporting procedures that workers are to follow if paleontological resources are encountered during project activities. The training program shall be presented by the designated paleontological resource specialist and may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or any other areas of interest or concern.

Verification: At least thirty (30) days prior to the start of project construction (or a lesser number of days mutually agreed to by the project owner and the CPM), the project owner shall submit to the CPM for review and approval the proposed employee training program and the set of reporting procedures the workers are to follow if paleontological resources are encountered during project construction.

If the employee-training program and set of procedures are not approved, the project owner, the designated paleontological resource specialist, and the CPM shall meet to discuss comments and negotiate necessary changes before the beginning of construction.

Documentation for training of additional new employees shall be provided in subsequent Monthly Compliance Reports, as appropriate.

DESIGNATED PALEONTOLOGICAL RESOURCE SPECIALIST DUTIES

PAL-4: The designated paleontological resource specialist shall be present at all times he or she deems appropriate to monitor construction-related grading, excavation, trenching, and/or augering in areas where potential fossil-bearing sediments have been identified. If the designated paleontological resource specialist determines that full-time monitoring is not necessary in certain portions of the project area or along portions of the linear facility routes, the designated specialist shall notify the project owner.

> **Verification:** The project owner shall include in the Monthly Compliance Reports a summary of paleontological activities conducted by the designated paleontological resource specialist.

PALEONTOLOGICAL RESOURCE RECOVERY

PAL-5: The project owner, through the designated paleontological resource specialist, shall ensure recovery, preparation for analysis, analysis, identification and inventory, the preparation for curation, and the delivery for curation of all significant paleontological resource materials encountered and collected during the monitoring, data recovery, mapping, and mitigation activities related to the project.

> **Verification:** The project owner shall maintain in its compliance files copies of signed contracts or agreements with the designated paleontological resource specialist and other qualified research specialists who will ensure the necessary data and fossil recovery, mapping, preparation for analysis, analysis, identification and inventory, and preparation for and delivery of all significant paleontological resource materials collected during data recovery and mitigation for the project. The project owner shall maintain these files for a period of three years after completion and approval of the CPM-approved Paleontological Resources Report and shall keep these files available for periodic audit by the CPM.

PALEONTOLOGICAL RESOURCE REPORT

PAL-6: The project owner shall ensure preparation of a Paleontological Resources Report by the designated paleontological resource specialist. The Paleontological Resources Report shall be completed following completion of the analysis of the recovered fossil materials and related information. The project owner shall submit the paleontological report to the CPM for approval.

> Protocol: The report shall include (but not be limited to) a description and inventory list of recovered fossil materials; a map showing the location of

paleontological resources encountered; determinations of sensitivity and significance; and a statement by the paleontological resource specialist that project impacts to paleontological resources have been mitigated.

Verification: The project owner shall submit a copy of the Paleontological Resources Report to the CPM for review and approval under a cover letter stating that it is a confidential document. The report is to be prepared by the designated paleontological resource specialist within 90 days following completion of the analysis of the recovered fossil materials.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

GEOLOGY

APPLICABLE LAW	DESCRIPTION
FEDERAL	
There are no Federal LORS related to geological hazards and resources.	N/A
STATE	
Uniform Building Code	Specifies acceptable design criteria for storage and open excavation with respect to seismic design and load bearing capacity.
California Building Code 1195	Specifies acceptable design criteria for storage and open excavation with respect to seismic design and load-bearing capacity.
LOCAL	
No local LORS related to geologic hazards and resources.	N/A

PALEONTOLOGICAL RESOURCES

APPLICABLE LAW	DESCRIPTION
FEDERAL	
There are no applicable LORS for this section.	
STATE	
California Environmental Quality Act	Defines significant impacts on a fossil site. Project construction might encounter fossil site/remains.
Public Resource Code Section 5097.5	Defines any unauthorized disturbance or removal of fossil site/remains on public land as a misdemeanor. Project construction might encounter fossil site/remains; construction workers might remove fossil remains.
Warren Alquist Act	Requires CEC to evaluate energy facility siting in unique areas of scientific concern. Project construction might encounter fossil site/remains.
LOCAL	
There are no applicable LORS for this section.	

HAZARDOUS MATERIALS

	POWER PLANT SITE	*CUMULATIVE IMPACTS*	*LORS COMPLIANCE*
Transportation	**MITIGATION**	**None**	**YES**
	Construction: Hazardous materials delivered during construction will be limited to gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants welding flux, lubricants, paint and paint thinner. No acutely hazardous materials will be transported to the power plant site. Operation: There will be ten truck deliveries per month to the refinery/power plant site of hazardous materials, such as aqueous ammonia, for the operation of the cogeneration facility. Deliveries of hazardous materials will be over pre-arranged routes selected for their safety features, including the absence of obstructions and curves, and minimal railroad traffic. **MITIGATION:** X Haulers will be specially licensed by the California Highway Patrol. Condition: **TRANS-3.** *References: AFC p. 6.4-4.*		
Storage & Use	**MITIGATION**	**None**	**YES**
	Construction: No acutely hazardous materials related to construction will be used or stored on-site at either the power plant. Some hazardous materials such as gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants welding flux, lubricants, paint and paint thinner will be used at the construction site. Given the nature of these substances, the risk of off-site exposure is insignificant. Operation: Hazardous and acutely hazardous material, such as aqueous ammonia, and natural gas or refinery fuel gas will be used for power plant operation. Tank ruptures or delivery spills are the only means by which there will be off-site exposure of on-site aqueous ammonia. The Valero refinery currently uses aqueous ammonia and has an approved Risk Management Plan in place. Natural gas or refinery fuel gas will not be stored on-site. Construction of the new pipeline to current codes, use of protective valves, and use of safe start-up procedures mitigate against natural gas or refinery fuel gas explosions and fire. **MITIGATION:** X The Project Owner shall not store and use amounts of acutely hazardous materials in excess of proposed quantities. Condition: **HAZ-2**. *References: AFC p. 6.9.2-4; SA Hazardous Materials, p. 4.4-9.*		
Disposal	**None**	**None**	**YES**
	The refinery currently has an approved, comprehensive program to manage wastes in accordance with state and federal regulations. Hazardous wastes will be collected by a licensed hazardous waste hauler and disposed of at a hazardous waste facility. (See **WASTE MANAGEMENT** section.) *Reference: AFC p. 6.11.7; SA Waste Mgt., p. 3.*		

HAZARDOUS MATERIALS – GENERAL

The purpose of this analysis is to determine if the proposed project will cause a potential significant impact on the public as a result of the transportation, use, handling, storage, or disposal of hazardous materials at the proposed facility.

This analysis does not address potential exposure of workers to hazardous materials used at the proposed facility. (See **WORKER SAFETY**.) There are specific regulations applicable to protection of workers in general the standards for exposure and methods used to protect workers are very different than those applicable to the general public. Employers must inform employees of hazards associated with their work and workers accept a higher level of risk than the general public in exchange for compensation. Workers are thus not afforded the same level of protection normally provided to the public. Further, special protective equipment and training can be used to protect workers and reduce the potential for health impacts associated with the handling of hazardous materials. Application of this type of mitigation would not be appropriate for the general public.

For additional information regarding hazardous materials transportation, see **TRAFFIC & TRANSPORTATION.** For additional information on hazardous waste disposal, see **WASTE MANAGEMENT**.

Transportation

There will be ten truck deliveries per month to the refinery/power plant site of hazardous materials, such as aqueous ammonia, for the operation of the cogeneration facility. (AFC p. 6.4-4.)

MITIGATION:

- X Hazardous materials haulers must be specially licensed by the California Highway Patrol. Condition: **TRANS–2;** see also **TRAFFIC & TRANSPORTATION** section.

Storage & Use

The only hazardous materials proposed for use at the project in quantities exceeding the reportable amounts defined in the California Health and Safety Code, section 25532 (j), is aqueous ammonia.

Aqueous Ammonia

Aqueous ammonia will be used in controlling the emission of oxides of nitrogen (NOx) from the combustion of natural gas in the facility. The accidental release of aqueous ammonia without proper mitigation can result in hazardous downwind concentrations of ammonia gas.

The use of aqueous ammonia significantly reduces the risk that would otherwise be associated with use of the more economical anhydrous form of ammonia. Use of the aqueous form eliminates the high internal energy associated with the more hazardous anhydrous form, which is stored as a liquefied gas at high pressure. The high pressure and

resultant latent internal energy associated with the anhydrous form of ammonia can act as a driving force in the event of an accidental release. Loss of containment involving anhydrous ammonia typically results in violent release and can rapidly introduce large quantities of the material into the ambient air, where it can be transported by the atmosphere and result in high down-wind concentrations. Spills associated with the aqueous form are typically much less violent and easier to contain. In addition, the emission rate from a release of aqueous ammonia is limited by mass transfer from the free surface of the spilled material, thus reducing the rate of emission to the atmosphere.

The refinery's aqueous ammonia storage and distribution system is currently in place and operating in support of other NOx reduction equipment at the refinery. A Risk Management Plan containing an offsite consequences analysis has been conducted on the potential release scenarios with the existing system, and there were no offsite consequences. (AFC p. 6.9-2; SA pp. Hazardous Materials, 4.4-8.)

Other Materials

Other hazardous materials stored in smaller quantities, such as mineral and lubricating oils, corrosion inhibitors, water conditioners and hydrogen are already present and are properly stored and handled at the refinery. These materials pose no significant potential for off-site impacts as a result of the quantities on site, their relative toxicity, and/or their environmental mobility.

Natural Gas/Refinery Fuel Gas

Natural gas and refinery fuel gas pose some risk of both fire and explosion. Although no natural gas is stored on-site, the project will use natural gas in its initial operation and as a potential backup fuel. The primary fuel is to be refinery fuel gas, which will not be stored on-site. The quantity of natural gas and refinery fuel gas on site, 1,000 scf in equipment and pipelines, will be below the RMP and California Accidental Release Prevention Program requirements. (AFC p. 6.9.2-4; SA Hazardous Materials, p. 4.4-9.)

MITIGATION:

- X Valero shall not store and use amounts of acutely hazardous materials in excess of proposed quantities. Condition: **HAZ-2**.

Disposal

Hazardous waste generated by the power plant will be minimal. The refinery currently has an approved, comprehensive program to manage wastes in accordance with state and federal regulations. Hazardous wastes will be collected by a licensed hazardous waste hauler and disposed of at a hazardous waste facility. Hazardous wastes will be transported off-site using a hazardous waste manifest, copies of which will be maintained for three years. (AFC p. 6.11.7; SA Waste Mgt., p. 3.) (See **WASTE MANAGEMENT**)

Cumulative Impacts

The hazardous material with the greatest potential to migrate off-site is aqueous ammonia. To determine the potential for cumulative impacts, an attempt was made to identify other sites in the project vicinity that use ammonia or other substances that react negatively with ammonia. No such businesses were identified. Additionally, inquiries to local planning agencies identified no proposed projects that would use ammonia or other reactive substances.

Findings

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to hazardous materials management and all potential adverse impacts related to hazardous materials management will be mitigated to insignificance.

CONDITIONS OF CERTIFICATION

AMMONIA TRANPORTATION PROTECTION

HAZ-1: All aqueous ammonia deliveries to the facility shall be in tanker trucks that meet or exceed the US Department of Transportation requirements for hazardous materials as established in the Code of Federal Regulations No. 49 Parts 171-180.

> **Verification:** The project owner shall include in its Monthly Compliance Reports, copies of all regulatory permits/licenses acquired by the project owner and/or subcontractors concerning the transport of aqueous ammonia and other hazardous materials.

HAZARDOUS MATERIALS INVENTORY

HAZ-2: The project owner shall not use any hazardous material in reportable quantities, as specified in Title 40, C. F.R. Part 355, Subpart J, section 355.50, Title 40, Subpart f, 68.130, not listed in AFC Table 6.9-1, unless approved in advance by the CPM.

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

LAWS, ORDINANCES, REGULATIONS & STANDARDS

HAZARDOUS MATERIALS

APPLICABLE LAW	DESCRIPTION
FEDERAL	
Clean Air Act (40 CFR 68)	Requires a RMP if listed hazardous materials are stored above threshold quantities (TQ).
Clean Water Act (40 CFR 112)	Requires preparation of an SPCC plan if oil is stored above TQ.
SARA Title III, Section 302	Requires certain planning activities when EHSs are present in excess of TQ. Aqueous ammonia to be used onsite in excess of TQ.
SARA Title III, Section 311	MSDSs to be kept onsite for each hazardous material. Required to be submitted to SERC, LEPC and local fire department.
SARA Title III, Section 313	Requires annual reporting of releases of hazardous materials.
49 CFR 171-177	Governs the transportation of hazardous materials, including the marking of the transportation vehicles.
STATE	
Health & Safety Code §25500, et seq. (Waters Bill)	Requires preparation of HMBP if hazardous materials are handled or stored in excess of TQ.
Health & Safety Code §25531, et seq.	Requires registration of facility with local authorities and preparation of RMP if hazardous materials stored or handled in excess of TQ.
CCR Title 8, Section 5189	Facility owners are required to implement safety management plans to ensure safe handling of hazardous materials.
California Building Code	Requirements regarding the storage and handling of hazardous materials.
California Government Code, Section 65850.2	Restricts issuance of COD until facility has submitted a RMP.
LOCAL	
City of Benicia Zoning Ordinance, § 17.70.260	Provides for the storage and handling of hazardous materials.

This page intentionally blank.

LAND USE

	POWER PLANT SITE	CUMULATIVE IMPACTS	LORS COMPLIANCE
General/Special Plans	None	None	YES
	The power plant site conforms to the General Industrial designation for the Benicia Industrial Park in the General Plan of the City of Benicia. *References: AFC p. 6.2-2; SA Land Use p. 4.5-1.*		
Zoning	None	None	YES
	The City of Benicia Zoning Ordinance requires a Conditional Use Permit for a Major Utility facility. *References: AFC p. 6.2-3,4; SA Land Use p. 4.5-1.*		
Open Space	None	None	YES
	The power plant site does not impact any designated open space. *References: SA Land Use p. 4.5-7.*		
Existing/ Planned Uses	None	None	YES
	Not only is the power plant consistent with the City of Benicia General Plan Industrial designation, it is compatible with the immediately surrounding industrial uses. Potential project-related air quality, public health, noise, visual and traffic impacts, including those to neighboring residences, have been mitigated to a level of insignificance. *References: AFC p. 6.2-2,3; Land Use SA pp. 4.5-168 – 169.*		

LAND USE - GENERAL

Land uses are 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 timeframe.

The approximately 1.9-acre proposed project site is entirely within the property of the existing Valero Refinery located at 3400 East Second Street in the City of Benicia. The site is located in an area currently occupied by two split-level gravel parking lots on a slope southeast of the refinery's administration building. The project's primary laydown area is a large gravel lot located immediately east of the project site, and adjacent to an access road and existing refinery process facilities. It is currently used as a laydown area for miscellaneous refinery projects, and will continue in that use. The secondary laydown area is located northwest of the project site on a currently sloping area with bare ground and scattered clumps of iceplant.

The proposed linear facilities for the project are an approximately 1,000-foot refinery gas pipeline; a 500-foot natural gas pipeline; and a 1,000-foot underground 12 kV electric transmission outlet line which would connect the cogeneration project to a new 12 kV switch house at the northeast corner of the refinery processing block. All three linear facilities will be located entirely within the interior of the refinery. (SA Land Use, p. 4.5-5.)

General Plan/Specific Plan

The Benicia General Plan (BGP) includes specific policies to preserve and enhance existing development and to provide for orderly and appropriate new development of the City of Benicia (Benicia) until approximately the year 2020. Actions and approvals required by the City of Benicia Planning Department must be consistent with the BGP.

The BGP contains the Community Development and Sustainability chapter (Chapter 2), which includes a discussion of the various types of land uses in Benicia. It also has goals and policies addressing growth management, economic development, circulation (i.e., transportation and traffic), community/public services and public facilities. The General Plan's Community Identity chapter (Chapter 3) covers historic and cultural resources, visual character, and open space and conservation of resources. The Community Health and Safety chapter (Chapter 4) addresses options for developing a more healthy community, hazards to the community, emergency response plans and community safety measures, and community noise sources and related effects. Each General Plan chapter contains goals, policies, and implementation measures that may be pertinent to the proposed project.

The proposed project site exists within the geographic area named in the BGP as the Benicia Industrial Park, which is the major existing industrial area in the city. The proposed site is more specifically located in the Valero Refinery within the Industrial Park. Benicia's industrial land has been divided into three General Plan Land Use categories: 1) General Industrial; 2) Limited Industrial; and 3) Water-related Industrial. The land use designation for the project site is General Industrial, which is the least restrictive of the three categories, and is intended to allow flexibility for industrial development. Over half of the Benicia Industrial Park is designated General Industrial. This includes nearly all of the area north of I-780 and east of East Second Street. This BGP category includes manufacturing, assembly, and packaging of goods and products from extracted, raw, and previously prepared materials and related industrial and commercial services. The Valero Refinery's operation involves manufacturing of petroleum products from raw materials. Electricity generation from the proposed cogeneration facility would be included in the sub-category of related industrial activities. SA Land Use, p. 4.5-1.)

- Land uses surrounding the project site include other industrial uses located within the eastern section of the Benicia Industrial Park such as refinery service businesses, warehousing, manufacturing, a self- storage unit operation, and CalTrans' Carquinez Bridge Maintenance Facility. Other uses to the east of the refinery property boundary include Interstate 680, the Southern Pacific Railroad, and the City of Benicia's waste water treatment plant. Valero's undeveloped buffer land areas are located to the west and south of the refinery. Residential uses are located west and south of the Valero buffer land boundaries, with the closest residence found approximately 3,000 feet away from the project site. (**LAND USE Figure 1**, AFC p. 6.2-2; SA Land Use, p. 4.5-5.)

Zoning Ordinances

The City of Benicia Zoning Ordinance (Benicia Zoning Ordinance) is the primary tool for achieving the objectives of the BGP. The Benicia Zoning Ordinance provides detailed specifications for allowable development within areas designated by the BGP. The project site is zoned General Industrial (IG), and exists within Benicia's principal "IG District". When "Major Utility" facilities, such as a cogeneration facility, are located within an IG district, they require a Conditional Use Permit (Hammer, 2001).

If the City of Benicia were the CEQA lead agency for this project, rather than the Energy Commission, the City's Planning Director or Planning Commission would review an application from Valero for a Conditional Use Permit. The Planning Director or Planning Commission would make certain findings required under the California Zoning Law and the Benicia Zoning Ordinance (Benicia Zoning Ordinance Title 17, Section 17.104.060).

Since the Energy Commission is the lead agency, the AFC functions as the application. The Planning Director or the Planning Commission has reviewed the application, and forwarded required Use Permit Required Findings to the Energy Commission for incorporation into this Decision.

Valero's undeveloped land, which serves as a buffer between the refinery's industrial uses and other land uses (particularly residential uses to the west), is zoned Limited Industrial (IL). The proposed project will not affect the IL zone. (AFC p. 6.2-2,3; SA Land Use, pp. 4.5-3-4.)

Open Space

There are no open space, habitat conservation, or natural community conservation plans adopted by the City of Benicia which affect the proposed project. (SA Land Use, p. 4.5-7.)

Valero agrees that only existing laydown areas at the refinery will be used for the proposed project.

Existing/Planned Uses

The proposed power plant is consistent with the Industrial land use designation in the City of Benicia General Plan and would not result in a change in the planned development pattern of the area as identified. Furthermore, the proposed facility is compatible with the existing industrial character of the immediate surrounding land uses. (SA Land Use, pp. 6-7.)

To the extent any residences could be subjected to increased noise, visual disturbance, and air emissions, mitigation has been provided by this Decision which reduces such potential impacts to insignificance. Refer to **NOISE, AIR QUALITY, PUBLIC HEALTH, VISUAL RESOURCES,** AND **TRAFFIC AND TRANSPORTATION** sections.

Cumulative Impacts

The proposed project does not require a general plan amendment to ensure that the appropriate land use designation for the proposed use is available on the site. The proposed project would therefore have no contribution to cumulative impacts from past land uses, land uses currently being proposed, and those that are anticipated to be proposed in the future. (SA Land Use, p. 7.)

Findings

The project conforms to applicable laws related to land use, and there are no potential land use impacts.

Conditional Use Permit Findings

(1) The proposed location of the use is in accord with the objectives of the Benicia Zoning Ordinance and the purposes of the district in which the site is located; (2) the proposed location of the conditional use and the proposed conditions under which it would be operated or maintained will be consistent with the general plan and will not be detrimental to the public health, safety, or welfare of persons residing or working in or adjacent to the neighborhood of such use, nor detrimental to properties or improvements in the vicinity or to the general welfare of the city; and (3) the proposed conditional use will comply with the provisions of the Benicia Zoning Ordinance, including any specific condition required for the proposed conditional use in the district in which it would be located.

CONDITIONS OF CERTIFICATION

None

LAWS, ORDINANCES, REGULATIONS & STANDARDS

LAND USE

APPLICABLE LAW	DESCRIPTION
FEDERAL	
Federal Aviation Administration	Interruption of flight patterns by exhaust stacks.
STATE	
There are no applicable State LORS for the section of Land Use.	
LOCAL	
City of Benicia General Plan	Describe specific land uses allowed within the City.
City of Benicia Zoning Ordinance	Implements the City of Benicia General Plan.

This page intentionally blank.

NOISE

	POWER PLANT SITE	CUMULATIVE IMPACTS	LORS COMPLIANCE
Loudness/ Time of Day	**MITIGATION**	**None**	**YES**

Construction: Most construction activity will occur more than 3,000 feet away from the nearest residential property. Sound levels at the local residences from daytime or nighttime construction are calculated to be less than the City of Benicia noise criteria.

MITIGATION:

- X The Project Owner will notify neighboring residents and business owners of impending construction at the power plant site and disseminate a telephone "hotline" number to report any undesirable noise conditions. Condition: **NOISE-1**.
- X Additionally, the Project Owner will create a noise complaint process through which it will attempt to resolve all noise complaints. Condition: **NOISE-2**.
- X Construction noise levels at any time will not exceed 55 dBA as measured at the nearest residential receptor. Condition: **NOISE-6**.

It is necessary to clear the steam pipes of debris that would damage the steam producing equipment. This flushing process, known as a steam blow, is traditionally accomplished by venting high-pressure steam to the atmosphere, which would produce a very loud noise at the nearest residential receptor. Use of exhaust silencers on the steam blow piping can reduce the noise, and Valero is considering the use of either a new, quieter steam blow process or alternative flushing processes.

MITIGATION:

- X If the Project Owner uses high-pressure steam blow, it will so notify nearby residents, use silencers and/or barriers, limit hours of steam blow and limit peak noise levels. Conditions: **NOISE-3 & NOISE-4.**

Operation: During its operating life, the cogeneration project will represent essentially a steady, continuous noise source day and night. The noise emitted by power plants during normal operations is generally broadband, steady state in nature. Occasional short-term increases in noise level will occur as steam relief valves open to vent pressure, or during startup or shutdown, as the plant transitions to and from steady-state operation. Operational sound levels at local residences are estimated to conform to the City of Benicia noise limitation of not more than a 3 dBA increase.

MITIGATION:

- X The Project Owner will conduct an "after" comparative community noise survey once the power plant achieves full operation to determine if the project conforms to applicable daytime and nighttime noise limitations. If necessary, the Project Owner will perform additional noise mitigation to achieve applicable noise limitations. Condition: **NOISE-5**.

References: AFC p. 6.3-3-6; SA Noise, pp. 4.6-6-9.

	POWER PLANT SITE	CUMULATIVE IMPACTS	LORS COMPLIANCE
Vibration	None	None	YES
	The primary source of vibration noise associated with a power plant is the operation of the turbines. It is anticipated that the plant's turbines will be maintained in optimal balance to minimize excessive vibration that can cause damage or long term wear. Consequently, no excessive vibration would be experienced by adjacent land uses. Another potential source of significant vibration is pile driving during construction. Given the relatively great distances to the nearest sensitive receptors, no vibration effects would be likely if pile driving were to be required. *References: SA Noise, p.4.6-7.*		

NOISE – GENERAL

The construction and operation of any power plant creates noise, or unwanted sound. Construction noise is a temporary phenomenon. Construction noise levels heard offsite will vary from hour to hour and day to day, depending on the equipment in use and the operations being performed.

The character and loudness of this noise, the times of day or night during which it is produced, and the proximity of the facility to any sensitive receptors combine to determine whether the facility will meet applicable noise control laws, cause any significant noise impacts.

Sound associated with the operation of the project will be produced by the by the inlets, outlets, structures, motors, pumps and fans associated with the four gas turbines, the heat steam recovery generators, the electric generators, the transformers, and the cooling tower. Essentially, project equipment will operate continuously and produce a steady sound 24-hours per day and seven days per week. Occasional short-term noise level increases will occur during plant startup or shut down, during load transitions, and during opening of steam release valves for venting pressure. At other times, the plant will be shut down, producing less noise.

Worker noise health and safety matters are addressed in **WORKER SAFETY**.

Loudness/Time of Day

Construction: The construction phase does not create a long-term increase in noise levels. The potentials for speech interference during the daytime or sleep disturbance at night are the most appropriate criteria for assessing construction noise impacts. When the hourly average construction noise level during the day exceeds 60 dBA Leq in an outdoor activity area near a residence, the construction noise will begin to interfere with speech communication.

Construction activity at night that would generate an hourly average noise level exceeding 55 dBA Leq outside a residence would cause noise levels inside to exceed 35 dBA even when windows are closed. A noise level in excess of 35 dBA would begin to interfere with sleep.

The City of Benicia Noise Ordinance prohibits construction activities at night (10:00 p.m. to 7:00 a.m.) when construction is within 500 feet of residential property. The cogeneration project construction activity will occur more than 3,000 feet away from the nearest residential property. Valero estimates that worst-case construction noise estimates for the nearest residence 3,000 feet away could reach 52 dBA. Thus, daytime and nighttime construction would not exceed 55 dBA. (AFC p. 6.3-6; SA Noise, p.4.6-8.)

MITIGATION:

- X The Project Owner will notify neighboring residents and business owners of impending construction at the power plant site together with a telephone number to report any undesirable noise conditions. Condition: **NOISE-1**.
- X Additionally, the Project Owner will create a noise complaint process through which it will attempt to resolve all noise complaints. Condition: **NOISE-2**.
- X Construction noise levels at any time will not exceed 55 dBA as measured at the nearest residential receptor. Condition: **NOISE-6**.

Since the power plant will include a heat recovery steam generator to produce steam from the waste heat of the combustion turbine, it is necessary to clear the steam pipes of debris that would damage this equipment. This flushing process, known as a steam blow, is traditionally accomplished by venting high-pressure steam to the atmosphere. This venting is performed in short bursts several times daily for two to three weeks and would produce a very loud noise. Use of exhaust silencers on the steam blow piping can reduce the noise substantially. Valero is considering the use of either a new, quieter steam blow process or alternative flushing processes, such as air blow or hydro-blast cleaning. (SA Noise, p. 4.5-8-9.)

Energy Commission staff has proposed that steam blow noise be limited to 75 dBA at the nearest residential receptor on the basis that, in the absence of a specific requirement, a provision of the Benicia General Plan allowing 75 dBA for emergency refinery flaring or pressure valve releases established an analogous benchmark. The City of Benicia has stated that a 75 dBA level in the General Plan is for flaring and pressure valve releases because they cannot be attenuated further. Thus, in Benicia's view, since quieter steam blow technologies are available, 75 dBA is not applicable and inappropriately loud, causing a significant noise impact. Valero is not certain that the quieter steam blow technologies will work with the project.

The Energy Commission disfavors establishing a proscriptive condition that might favor a particular technology or vendor. The steam blow noise issue revolves around peak noise levels, duration and time of day. Valero, Benicia, and Energy Commission staff agree that steam blows should be restricted to 9 a.m. to 6 p.m., Monday through Friday. 75 dBA was established by Benicia to account for a short-term noise spike caused by a refinery emergency. To the extent the 75 dBA limitation provides guidance, the Commission finds such guidance suggests that noise at such a level be for a limited duration, on the order of

five minutes. Since steam blows are inherently not emergency events, they can be planned and predicted. If a planned steam blow is longer than 5 minutes, it must conform to the limitation placed on all construction activity, 55 dBA. Condition of Certification **NOISE-4** reflects the different requirements which arise from the duration of the steam blows.

MITIGATION:

- ☑ If the Project Owner uses high-pressure steam blow, it will so notify nearby residents, use silencers and/or barriers, limit hours of steam blows, and limit peak noise levels. Conditions: **NOISE-3 & NOISE-4**.

Operation: During its operating life, the cogeneration project will represent essentially a steady, continuous noise source day and night. The noise emitted by power plants during normal operations is generally broadband, steady state in nature. Occasional short-term increases in noise level will occur as steam relief valves open to vent pressure, 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 will decrease.

The City of Benicia General Plan, Chapter 4, establishes the applicable noise level performance standards for the project at 55 dBA Leq exterior hourly during daytime and 50 dBA Leq during nighttime hours, as predicted or measured at residential properties. If these levels are exceeded with current ambient noise, then the criteria allow less than a 3 dBA increase above that ambient level. (AFC p. 6.3-3.)

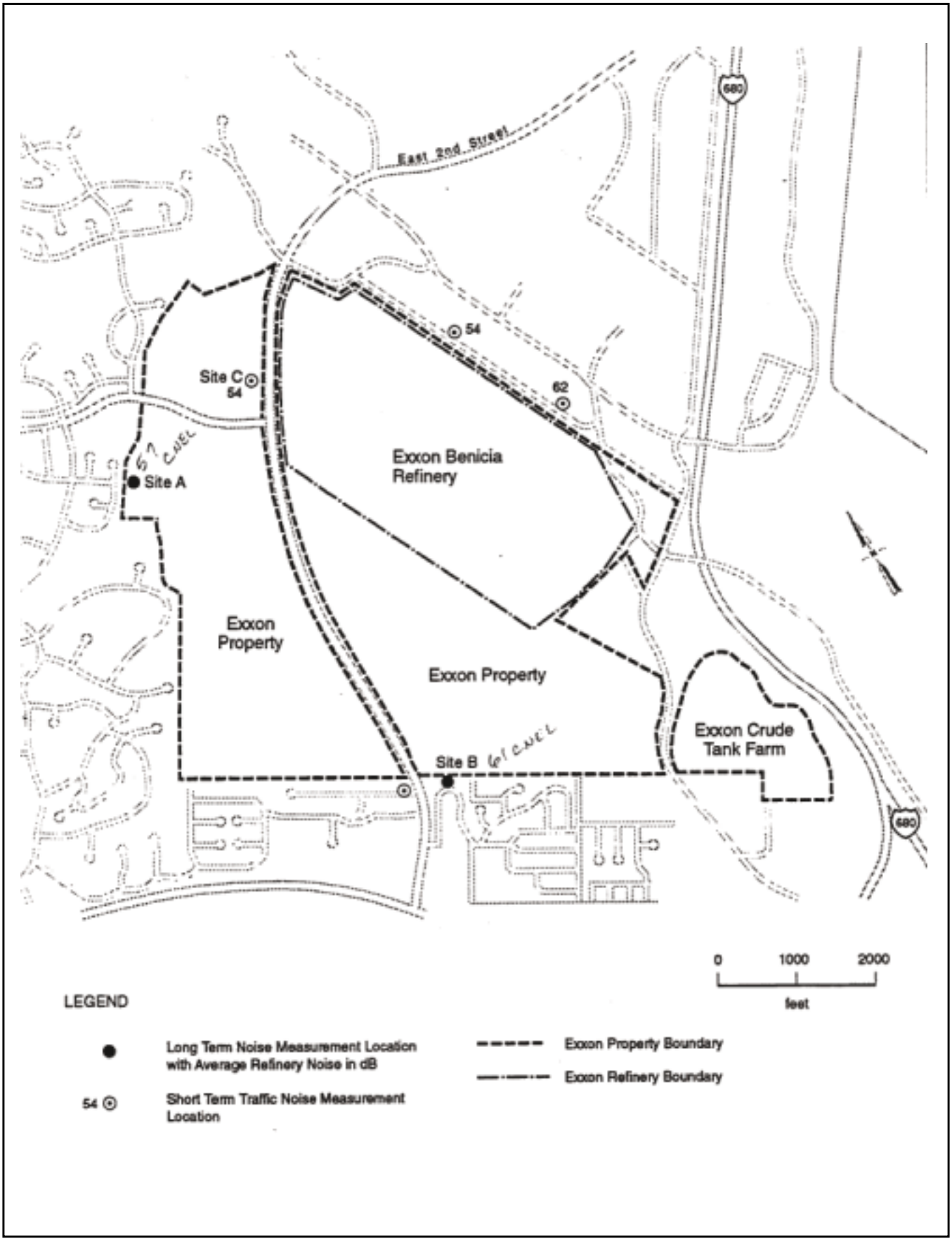
According to Appendix F in the AFC, the noise measurement at the nearest residential receptor (382 Allen Way @ 3,000 feet) during refinery operation was recorded ranging between 49 and 60 dBA, with an average noise level of 56 dBA. (AFC p. 6.3-4) Another residential receptor (37 La Cruz Avenue @ 4,000 feet) showed a range of 52 to 61 dBA, with an average noise level of 59 dBA. (**NOISE FIGURE 1**, AFC p. 6.3-5; Appendix F.)

According to Valero, conformance with City of Benicia criteria requires the project noise to be less than 56 dBA at the nearest Allen Way residential property. Valero believes that it will not be difficult to achieve this level due to acoustical enclosures of noisy major project equipment and intervening hillsides between the project and the residence. (AFC p. 6.3-5) To assure compliance, Valero will conduct "after" sound level measurements at the residential locations to verify required noise levels are met. If necessary, additional noise abatement measure would be undertaken. (AFC p. 6.3-5.)

MITIGATION:

- ☑ The Project Owner will conduct an "after" comparative community noise survey once the power plant achieves full operation to determine if the project conforms to applicable daytime and nighttime noise limitations. If necessary, the Project Owner will perform additional noise mitigation to achieve applicable noise limitations. Condition: **NOISE-5**.

Noise Figure 1
Valero Cogeneration Project



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2001
SOURCE: AFC Figure 4.6-1

Vibration

A potential source of significant vibration is pile driving during construction. Given the relatively great distances to the nearest sensitive receptors, no vibration effects would be likely if pile driving were to be required.

The primary source of vibration noise associated with a power plant is the operation of the turbines. It is anticipated that the plant's turbines will be maintained in optimal balance to minimize excessive vibration that can cause damage or long term wear. Consequently, no excessive vibration would be experienced by adjacent land uses. (SA Noise, p.4.6-7.)

Cumulative Impacts

No other new or proposed noise-producing development near the project site was identified which might cause cumulative impacts exceedences of the City of Benicia noise standards or criteria. (AFC p. 6.3-7.)

Findings

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to noise and all potential noise impacts will be mitigated to insignificance.

CONDITIONS OF CERTIFICATION

PRE-CONSTRUCTION NOTICE & CONSTRUCTION NOISE COMPLAINT HOTLINE

NOISE-1: At least 15 days prior to the start of project-related ground disturbing activities, the project owner shall notify all residents and business owners within one-half 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 and disseminate 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 maintained until the project has been operational for at least one year.

> **Verification:** The project owner shall transmit to the Energy Commission Compliance Project Manager (CPM) in the first Monthly Construction Report following the start of project-related ground disturbing activities, a statement, signed by the project manager, attesting that the above notification has been performed, and describing the method of that notification. This statement shall also attest that the telephone number has been established and posted at the site.

NOISE COMPLAINT PROCESS

NOISE-2: Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints. The project owner or authorized agent shall:

- use the Complaint Resolution Form or functionally equivalent procedure (such as Benicia Refinery's Guidelines for Handling Outside Complaints) 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 the complaint;
- if the noise is project related, take all feasible measures to reduce the noise at its source; and
- if the noise is project related, 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 noise complaint, the project owner shall file a copy of the Noise Complaint Resolution Form, or similar instrument approved by the CPM, with the City of Benicia, 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.

HIGH PRESSURE STEAM BLOW

NOISE-3: If a traditional, high-pressure steam blow process is employed, the project owner shall equip steam blow piping with a temporary silencer and/or barriers that quiets the noise of steam blows measured at the nearest residential receptor, as follows:

- 75 dBA for steam blows of 5 minutes or less per hour; or
- 55 dBA for steam blows greater than 5 minutes per hour.

The project owner shall conduct steam blows only during the hours of 9 a.m. to 6 p.m. Monday through Friday, unless the CPM agrees to longer hours based on a demonstration by the project owner that offsite noise impacts will not cause annoyance.

If a low-pressure continuous steam blow process is employed, the project owner shall submit a description of this process, with expected noise levels and projected hours of execution, to the CPM, who shall review the proposal with the objective of ensuring noise levels do not exceed 55 dBA at any affected residence. If the low-pressure process is approved by the CPM, the project owner shall implement it in accordance with the requirements of the CPM.

Verification: At least 15 days prior to the first high-pressure steam blow, the project owner shall submit to the CPM drawings or other information describing the temporary steam blow silencer and/or barriers and the noise levels expected, and a description of the steam blow schedule. At least 15 days prior to any low-pressure continuous steam

blow, the project owner shall submit to the CPM drawings or other information describing the process, including the noise levels expected and the projected time schedule for execution of the process.

STEAM BLOW NOTIFICATION

NOISE-4: If high pressure steam blows are used, at least 15 days prior to the first steam blow(s), the project owner shall notify all residents or business owners within one mile of the site of the planned steam blow activity, and shall make the notification available to other area residents in an appropriate manner. The notification may be in the form of letters to the area residences, telephone calls, fliers or other effective means. The notification shall include a description of the purpose and nature of the steam blow(s), the proposed schedule, the expected sound levels, and the explanation that it is a one-time operation and not a part of normal plant operations.

Verification: Within five (5) days of notifying these entities, the project owner shall send a letter to the CPM confirming that they have been notified of the planned steam blow activities, including a description of the method(s) of that notification.

OPERATING NOISE LIMITATION

NOISE-5: Within 30 days of the project first achieving normal operation, the project owner shall conduct a 25-hour community noise survey, utilizing the same monitoring sites employed in the pre-project ambient noise survey as a minimum. The survey shall also include the octave band pressure levels to ensure that no new pure-tone noise components have been introduced. No new pure tone components may be produced by the project. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints. Steam relief valves shall be adequately treated or muffled to ensure that the maximum noise level at any sensistive receptor does not exceed 75 dBA. If the results from the survey indicate that the project noise levels at the closest sensitive receptor are in excess of 55 dBA Leq during daytime hours (10 a.m. to 4 p.m.) and 53 dBA L90 during nighttime hours (11 p.m. to 4 a.m.), additional mitigation measures shall be implemented to reduce noise to a level of compliance with this limit.

Verification: Within 30 days after completing the survey, the project owner shall submit a summary report of the survey to the City of Benicia, and to the CPM. Included in the report shall be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limits, and a schedule, subject to CPM approval, for implementing these measures. If additional mitigation measures are necessary, within 30 days of completion of installation of these measures, the project owner shall submit to the CPM a summary report of a new noise survey, performed as described above and showing compliance with this condition.

CONSTRUCTION TIME RESTRICTIONS

NOISE-6: Construction noise levels shall be limited to 55 dBA Leq as measured at any affected residence, during any hour of the day or night. If construction noise levels exceed

an hourly average noise level of 55 dBA Leq, the construction equipment that is the source of the excessive noise shall be shut down or the noise mitigated to a noise level below 55 dBA Leq.

Verification: The Project Owner shall monitor noise levels at the nearest noise receptor (residence on Allen Way) at random evening times when nighttime construction activities are in progress. The project owner shall transmit to the CPM in the first Monthly Construction Report a statement acknowledging that the above restrictions will be observed throughout the construction of the project and monitoring data.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

NOISE

APPLICABLE LAW	DESCRIPTION
FEDERAL	
EPA 1974 Noise Guidelines	Guidelines for State and Local Governments
HUD Circular 1390.2	Directions for noise levels at construction site boundaries not to exceed 65 dBA for 9 hours in a 24-hour period.
29 CFR Section 1910.95 (OSHA Health and Safety Act of 1970)	Exposure of workers to over an 8-hour shift should be limited to 90 dBA.
STATE	
California Vehicle Code §23130 and 23130.5	Regulates vehicle noise limits on California Highways.
8 CCR §5095 et seq. (Cal-OSHA)	Sets employee noise exposure limits. Equivalent to Federal OSHA standards.
LOCAL	
City of Benicia General Plan Section 4	Establishes noise performance standards.
City of Benicia Noise Ordinance	Establishes construction noise standards..

PUBLIC HEALTH

	POWER PLANT SITE	CUMULATIVE IMPACTS	LORS CONFORMANCE
Construction Health Risks	**MITIGATION**	**None**	**YES**
	Large construction equipment potentially contributes to existing violations of state 24-hour PM_{10} standards. To minimize PM_{10} emissions, the Project Owner shall require its construction contractors to minimize emissions from diesel powered earthmoving equipment. Condition **AQ-55.** Grading and excavation activities potentially produce dust which can be transported off-site by wind. To control airborne fugitive dust, the Project Owner shall water or apply chemical dust suppressants to disturbed areas, apply gravel or paving to traffic areas, and wash wheels of vehicles or large trucks leaving the site. Condition: **AQ-52, AQ-53 & AQ-54**. *References: SA Air Quality, pp. 4.1-16, 19.*		
Cancer Risks	**Insignificant**	**None**	**YES**
	The conservative screening level health risk assessment for non-criteria air pollutants conducted under California Air Pollution Control Officer's Association guidelines finds a maximum exposure to the highest level of carcinogenic project pollutants for 70 years has a cancer risk of 0.978 in a million, below the 1 in a million benchmark for a potential health impact. *Reference: AFC App. C; SA Public Health, p. 4.7-4; PDOC p. 18; PDOC p. 18, App. F.*		
Non-Cancer Risks	**Insignificant**	**None**	**YES**
	The health risk assessment for non-criteria air pollutants conducted under California Air Pollution Control Officer's Association guidelines finds an exposure to the highest level of project pollutants produces a chronic hazard index of 0.1 and an acute hazard index of 0.03. Both are below a threshold hazard index of 1.0, and thus not a significant health impact. Ongoing exceedences of the California 1-hour ozone standard and 24-hour PM10 standard suggest a background health hazard. Valero has fully mitigated project ozone and PM_{10} impacts through offsets, thus making the project's ozone and PM_{10} contributions insignificant in terms of public health impact. (See **AIR QUALITY**) *References: AFC App. C; SA Public Health, p. 4.7-4; PDOC p. 18, App. F.*		

PUBLIC HEALTH – GENERAL

Operating the proposed power plant would create combustion products and possibly expose the general public and workers to these pollutants as well as the toxic chemicals associated with other aspects of facility operations. The purpose of this public health analysis is to determine whether a significant health risk would result from public exposure to these chemicals and combustion by-products routinely emitted during project operations. The issue of possible worker exposure is addressed in the **WORKER SAFETY** section. Exposure to electric and magnetic fields (EMF) is addressed in the **TRANSMISSION LINE SAFETY AND NUISANCE** section.

The exposure of primary concern in this section is to pollutants for which no air quality standards have been established. These are known as non-criteria pollutants, toxic air pollutants, or air toxics. Those for which ambient air quality standards have been established are known as criteria pollutants. The criteria pollutants are also identified in this section because of their potentially significant contribution to the total pollutant exposure in any given area. Furthermore, the same control technologies may be effective for controlling both types of pollutants when emitted from the same source.

Construction Health Risks

Construction-phase impacts are those from human exposure to (a) the windblown dust from site grading and other construction-related activities and (b) emissions from the heavy equipment and vehicles to be used for construction.

The procedures for minimizing such dust generation are addressed in the **AIR QUALITY** section while the requirements for soil remediation are specified in the **WASTE MANAGEMENT** section.

Valero has agreed to Conditions of Certification to address construction equipment emissions. The measures to mitigate these emissions have been specified in Conditions **AQ-55**. Since chronic health impacts are usually not expected from equipment emissions within the relatively short construction periods, only acute health effects could be significant with respect to the toxic exhaust emissions of concern in this analysis. Mitigation measures specified in Condition **AQ-55** are sufficient to reduce these potential acute health effects to insignificance.

Cancer Risks

According to present understanding, cancer from carcinogenic exposure results from biological effects at the molecular level. Such effects are currently assumed possible from every exposure to a carcinogen. Therefore, Energy Commission staff and other regulatory agencies generally consider the likelihood of cancer as more sensitive than the likelihood of non-cancer effects for assessing the environmental acceptability of a source of pollutants. This accounts for the prominence of theoretical cancer risk estimates in the environmental risk assessment process.

For any source of specific concern, the potential risk of cancer is obtained by multiplying the exposure estimate by the potency factors for the individual carcinogens involved. Health experts generally consider a potential cancer risk of one in a million as the de minimis level, which is the level below which the related exposure is negligible (meaning that project operation is not expected to result in any increase in cancer). Above this level, further mitigation could be recommended after consideration of issues related to the limitations of the risk assessment process.

Valero conducted a screening level health risk assessment for the project-related non-criteria pollutants of potential significance. This assessment was conducted according to procedures specified in the 1993 California Air Pollution Control Officer's Association (CAPCOA) guidelines for sources of this type. The screening level assessment is uses conservative assumptions to avoid underestimating actual risks. The cancer risk estimates from this analytical approach represent only the upper bound on this risk. The actual risk would likely be much lower. Thus, when a screening level analysis is less than 1 in a million, the potential cancer risk is insignificant and additional, more refined analysis is not warranted.

A risk estimate of 0.978 in a million was calculated for all the project's carcinogens from this screening level analysis. A more refined analysis would likely yield a lower estimate. This screening level estimates suggests that the project's cancer risk would be negligible and is significantly less than the 10 in a million which staff considers as a trigger for recommending mitigation above the applied toxic-best available control technology or T-BACT. This means that the proposed emission controls measures are adequate for the project's operations-related toxic emissions of primary concern in this analysis. This risk estimate is also below both the 1 in a million that BAAQMD considers significant for this type of project and the 10 in a million requiring public notification. (AFC App. C; SA Public Health, p. 4.7-4; PDOC p. 18, App. F)

Non-cancer Risk

Valero's health risk assessment reviewed non-criteria pollutants with respect to non-cancer effects. A chronic hazard index of 0.0114 was calculated for the project's non-carcinogenic pollutants considered together. Their acute hazard index was calculated to be 0.085. These indices are well below the levels of potential health significance (hazard index 1.0), suggesting that no significant health impacts would likely be associated with the project's non-criteria pollutants. (AFC App. C; SA Public Health, p. 4.7-4; PDOC p. 18, App. F.)

Cumulative Impacts

AFC Appendix C shows that no significant sources of the toxic pollutants of concern in this analysis are proposed within six miles of project. This means that the project's emissions and existing background concentrations would make up any exposures of a cumulative nature in the immediate project area.

Since the project is proposed within an operating refinery, Energy Commission health staff considered it important to assess the contribution of on-going refinery emissions that constitute an important fraction of the existing background levels. The 1999 report for BAAQMD's Toxic Contaminant Control Program (BAAQMD 1999 page 15) shows these on-going refinery operations are not contributing these toxic pollutants at levels posing a significant health risk according to the Air District's significance criteria for such sources. The relatively low cancer and non-cancer risk estimates for the cogeneration project suggest that the addition of its toxic emissions would be unlikely to increase any area cumulative exposures to significant levels.

These annual air contaminant reports are part of BAAQMD's program for reducing district-wide toxic emissions as required of all California Air District under California Assembly Bill 2588 of 1987. (SA Public Health 4.7-5)

Finding

With the implementation of the Conditions of Certification in other sections of this Decision, the project conforms with applicable laws related to public health, and all potential adverse impacts to public health will be mitigated to insignificance.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

PUBLIC HEALTH

APPLICABLE LAW	DESCRIPTION
FEDERAL	
Clean Air Act, §109 and 301(a). 42 USC §7401 et seq. and 40 CFR 50	Established air quality standards to protect the public health from exposure to air pollutants.
Clean Air Act §112(g), 42 USC §7412, and 40 CCR 63	Requires review of new or modified sources prior to promulgation of the standard and establishes emissions standards for HAP from specific source types including gas turbines. VALERO will not be a major source of HAP and hence is not subject to these provisions at this time.
STATE	
Health and Safety Code §25249.5 et seq. (Safe Drinking Water and Toxic Enforcement Act -–Proposition 65)	Requires posting of facilities that have chemicals known to cause cancer and public notification of significant risks.
Health and Safety Code §39650-39625	Provides for a special statewide program directed by the ARB to evaluate the risks associated with emissions of chemicals designated as TAC and to develop and mandate methods to control these emissions.
Health and Safety Code §44300 et seq. (Air Toxics "Hot Spots" Information and Assessment Act –AB2588)	Requires facilities that emit listed criteria or toxic pollutants to submit emissions inventories to the local air district. Such facilities may also be required to conduct a health risk assessment.
LOCAL	
	Prohibits discharge of air contaminants that cause injury, detriment, nuisance or annoyance to the public, or that damage businesses or property.

SOCIOCECONOMICS

	POWER PLANT SITE	CUMULATIVE IMPACTS	LORS COMPLIANCE
Employment	None	None	YES
	Construction: The construction workforce, peaking at 150 workers, is less than one-half percent of the construction workforce in Solano and Contra Costa Counties; thereby, creating no employment or population impacts. The project will benefit local employment directly. Operation: The permanent operation workforce for the power plant will be largely shared with existing refinery employees; only up to three or four new employees will be required to operate the power plant. Even if the new employees come from outside the study area, their small number causes no employment or population impact. *References: AFC p. 6.7.3.1–6.7.3.3; SA Socioeconomics p. 4.8-7.*		
Housing	None	None	YES
	Construction: Most of the construction workforce, peaking at 150 workers during the 12-month construction period, is expected to commute to the project. There are sufficient housing resources for any non-commuting workers including hotels, motels, and recreational vehicle parks. Operation: The operation workforce, consisting mostly of existing employees, is expected to commute to the project. There are sufficient housing resources for any new permanent employees to relocate to the project without impacting housing in the study area. References*: AFC p. 6.7.3.4; SA Socioeconomics p. 4.8-7,8.*		
Schools	None	None	YES
	Construction: Most of the construction workforce is expected to commute to the project. There would be no impact to the schools in the Benicia Unified School District. Operation: One to four new families of new fulltime operation employees may move into the project area and enter local schools without causing an impact to existing schools. References: *AFC p. 6.7.3.6; SA Socioeconomics p. 4.8-11,12.*		

Utility/Public Services	**Insignificant**	**None**	**YES**
	Construction: Construction is not expected to create an additional demand for utilities, including landfill disposal or wastewater treatment. Operation: The operation of the power plant not expected to create an additional demand for public services. *References: AFC p. 6.7.3.5; SA* Socioeconomics p. 4.8-11,12.		
Economy/ Government Finance	**None**	**None**	**YES**
	Construction: The total construction payroll for the power plant is estimated to be $6 million. The cost for materials and supplies is estimated to be approximately $5 million. Operation: Operation payroll is approximately $50,000 per year. Capital cost is $100 million. The project is expected to provide $ 1 million in local tax revenues. *Reference: AFC p. 6.6-2; SA* Socioeconomics pp. 4.8-12.		
Environmental Justice	**None**	**None**	**YES**
	Minority/Low Income Population: Within a six-mile study area, revised census data shows the minority population exceeds 50 percent, and low-income population is below 50 percent. Disproportionate Impacts: There are no significant project-related unmitigated adverse environmental or public health impacts. Potential air quality, public health, and hazardous materials handling impacts to the public have been mitigated to less than significance through the Conditions of Certification in this Decision. The location of the project at an existing power plant site causes no significant land use impact. There are no significant cumulative project impacts, nor adverse impacts that fall disproportionately upon minority or low-income populations. *Reference: SA* Socioeconomics p. 4.8-11,12.		

SOCIOECONOMICS – GENERAL

The socioeconomic impact analysis evaluates the potential direct and cumulative project-induced impacts on community services and/or infrastructure including schools, medical and protective services and related community issues such as environmental justice.

The project site is located in the City of Benicia in the southernmost portion of Solano County. Located midway between San Francisco and Sacramento, Solano County is bounded by Sacramento County on the east, Napa County on the west, Yolo County on the north, and Contra Costa County on the south. Solano is described as one of the ten fastest growing counties in California, which is a trend anticipated to continue in the future (DOF, 2001). Among the nine San Francisco Bay Area counties, Solano is expected to account for 32 percent of all growth. Residents from the more densely populated areas of San Francisco and Alameda counties are migrating to Solano and Contra Costa Counties (ABAG, 2000).

Growth in Solano County may be attributed to the county's affordable land for housing, commercial/industrial development, and businesses serving the Bay Area, Sacramento, and global markets. Projections indicate that by 2010, the county's population will reach 481,700 and the number of jobs will be 171,960, which amount to an increase of about 80,000 and 30,000 from the year 2000, respectively (ABAG, 2000). This represents a projected population increase of approximately 17 percent, and a projected increase in employment of 20 percent over the next decade.

Employment

The Project Owner expects that most construction workers would commute daily two hours or less each way to the project site. Most construction workers would not be expected to relocate during construction. Construction of the facility would take approximately 12 months, and the personnel required for construction would peak at 150 workers on site. Approximately three or four new personnel would be employed during operations.

The construction and operation of the project would not have a significant impact on employment either regionally or locally. In general, full-time jobs have a multiplier effect on the local and regional economy by supporting additionally indirect job growth. A net benefit is therefore likely to occur. (AFC p. 6.7.3.1 – 6.7.3.4; SA Socioeconomics pp. 4.8-3, 4, 6,7.)

Housing

The demand for housing within the study area is not expected to increase appreciably as a result of the proposed project because the vast majority of the work force is expected to commute from within a two-hour distance of the project site. A small percentage of construction workers may choose to commute on a weekly basis; however, there are adequate hotels/motels, recreational vehicle parks, and campgrounds within the local project vicinity to accommodate these workers. The construction of the proposed project will not significantly increase the demand for housing.

Of the employees needed for operation of the project, it is estimated that virtually all of the plant's workers would commute from within the study area. Any employees hired from outside of the study area would likely relocate to within a one-hour commuting distance of the project site. Such relocation would not create a significant impact on available housing within the study area. (AFC p. 6.7.3.4; SA Socioeconomics pp. 4.8-7, 8.)

Schools

Since the majority of the project's construction personnel would commute, the project is not anticipated to impact the Benicia Unified School District or other local school districts. Upon operation, an estimated one to four new families may enter the local project area. The Benicia Unified School District enrollment is currently at capacity in the majority of schools; thus any influx of new workers may potentially impact the District. The District would charge

School Impact Fees for the square associated with the project (approximately $10, 000), which, by state law, mitigates potential impacts to the District. (AFC p. 6.6-2; SA Socioeconomics pp. 4.8-11.)

Utility/Public Services

Construction and operation of the project is not expected to create a demand for utilities that cannot be met by local utility providers. There is adequate makeup water, natural gas and electrical supplies, as well as available landfill space to meet the project's construction and operational demands.

There are adequate fire, medical and emergency response services within a 10-mile radius of the project site. Therefore, construction and operation of the proposed project is not expected to create a significant impact on public and emergency services. (AFC p. 6.6-2; SA Socioeconomics pp. 4.8-5, 11, 12.)

Economy/Government Finance

The Project Owner estimates that the total capital cost of the proposed project is $100 million. The operational payroll for the project is estimated to be approximately $50,000 per. The total construction payroll for the power plant is estimated to be $6 million. This estimate excludes payroll taxes. The cost for materials and supplies is estimated to be approximately $5 million.

The proposed project is anticipated to provide an estimated $1 million in local property tax revenues. Project construction and operation would create a beneficial impact on both the study area's economic base and fiscal resources through employment of both local and regional workers, as well as through the purchases of local and regional construction materials.

In general, the local study area is experiencing significant growth. To date, no known concerns have been expressed regarding the potential for local residents and businesses to be unable to get full market value for their properties once the proposed plant is built and operating. (AFC p. 6.6-2.)

Environmental Justice

Presidential Executive Order 12898, entitled "Federal Actions to address Environmental Justice (EJ) in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on agencies to achieve environmental justice as part of this mission. The order requires the US Environmental Protection Agency (EPA) and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or

environmental effects of their programs, policies, and activities on minority and/or low-income populations.

For all siting cases, the Energy Commission follows the U.S. Environmental Protection Agency's guidance in conducting a two-step environmental justice analysis. The analysis assesses:

- Whether the population in the area potentially affected by the proposed project is more than 50 percent minority and/or low-income, or has a minority or low-income population percentage that is meaningfully greater than the percent of minority or low income in the general population, or other appropriate unit of geographic analysis; and
- Whether significant environmental impacts are likely to fall disproportionately on the minority and/or low-income population.

Commission staff determined the affected area for this environmental justice analysis to be the area within a six-mile radius of the proposed project site. This area corresponds to the area analyzed for potential air quality and public health impacts.

Updated census tract data were reviewed to assess the demographic profile within a six-mile radius of the proposed power plant site. On the basis of this data, the area within a six-mile radius has become populated by 54 percent minority population. (SA Socioeconomics, pp. 4.8-9; **SOCIOECONOMICS Figure 1.**)

Federal guidance does not give a percentage of population threshold to determine when a low-income population becomes recognized for an environmental justice analysis. The Energy Commission uses the same greater than 50 percent threshold that is used for minority populations, as well as a "meaningfully greater" percentage population. Staff found the percentage of population below the poverty level in local census tracts.

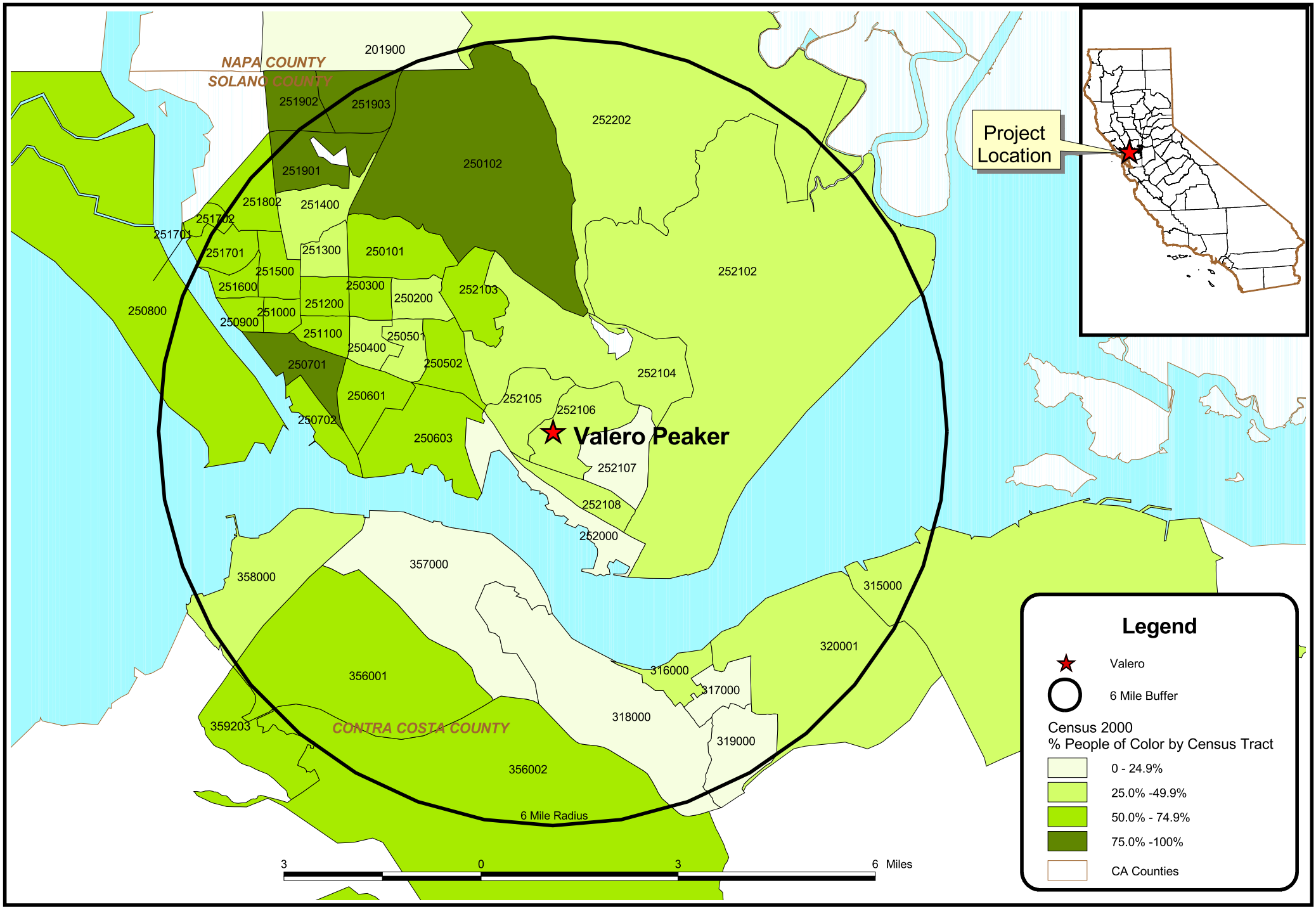
However, even though low-income and minority populations exist in the area around the proposed project, this Decision finds there are no identified significant, project-related, unmitigated adverse human health or environmental effects. Therefore, no significant adverse impacts to minority or low-income populations are expected to occur. The **AIR QUALITY, PUBLIC HEALTH** AND **HAZARDOUS MATERIALS** sections of this Decision indicate that potential risks to all segments the public can be mitigated to a less-than-significant level through use of minimized hazardous materials, engineering controls, operational controls, administrative controls, and emergency response planning. Additionally, no significant adverse cumulative impacts are associated with the proposed power plant project. Therefore, there are no significant adverse cumulative impacts to minority or low-income populations are expected. (SA Socioeconomics pp. 4.8-9.)

Cumulative Impacts

Cumulative impacts were assessed by researching other large-scale construction projects in the study area, where overlapping construction schedules could create a demand for workers that could not be met by labor in the four-county area. Based on discussion with local

SOCIOECONOMICS - FIGURE 1

Valero Power Project - Census 2000 Percentage People of Color by Census Tract - Six Mile Buffer



CALIFORNIA ENERGY COMMISSION, ENERGY SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2001

SOURCE: California Energy Commission Statewide Transmission & Power Plant Maps 2001, Census 2000 PL 94 - 171- Matrix PL2

planning agencies, no large-scale construction projects were identified within the study area that could create potentially significant impacts to the socioeconomics of the region. Similarly, there were no cumulative impacts identified from operation of the proposed project, as most permanent project personnel will be hired from the area and would not likely relocate. Consequently, no significant cumulative impacts on the socioeconomics of the study area are anticipated to occur due to operation.

Findings

The project conforms to applicable laws related to socioeconomic matters and all potential socioeconomic impacts will be insignificant.

CONDITIONS OF CERTIFICATION

None

LAWS, ORDINANCES, REGULATIONS & STANDARDS

SOCIOECONOMICS

APPLICABLE LAW	DESCRIPTION
FEDERAL	
Executive Order 12898	Executive Order 12898, "Federal Actions to address Environmental Justice (EJ) in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on agencies to achieve environmental justice as part of this mission. The Order requires the US Environmental Protection Agency (EPA) and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.
STATE	
California Government Code sec. 65995-65997	Includes provisions for levies against development projects in school districts. The Benicia Unified School District will implement school impact fees based on new building square footage.
LOCAL	
None	

This page intentionally blank.

TRAFFIC & TRANSPORTATION

	POWER PLANT SITE	CUMULATIVE IMPACTS	LORS COMPLIANCE
Congestion	**MITIGATION**	**MITIGATION**	**YES**

Construction: Commuting construction workers, estimated to peak twice for 3 months at 150 workers, would not cause an unacceptable level of congestion on I-680 or I-780 or local streets during peak commute hours during the 12 month construction period. Truck deliveries to the site of construction equipment and supplies, estimated to peak at 20 deliveries per day during the 3 peak months, are within the design limits of the Interstate freeways and local streets.

A potential cumulative traffic impact may arise from the simultaneous construction of the cogeneration project, the MTBE phase-out project, and a refinery "turnaround" which is generally unscheduled refinery maintenance.

MITIGATION:

X The Project Owner's shall prepare a Traffic Control Plan to assure that added peak commute traffic does not create unacceptable congestion impacts. To achieve this goal, the Project Owner will maintain a vehicle count and coordinate with the City of Benicia to use one or more measures, such as carpooling, staggered arrival and departure times, use of alternative access points, and flagman traffic control. Condition: **TRANS-3**.

Operation: Valero expects 10 truck deliveries per month for materials associated with project operation. A permanent operating labor force of approximately 5 or fewer full-time project employees, working and commuting over three shifts. Neither operation deliveries nor commuting will impact traffic on local streets or Interstate freeways.

References: AFC p. 6.4-1-4; SA Traffic & Transportation pp. 4.9-4-7.

	POWER PLANT SITE	CUMULATIVE IMPACTS	LORS COMPLIANCE
Safety	**MITIGATION**	**None**	**YES**
	Construction: Construction will require the use of large vehicles, occasionally including oversize or overweight trucks. Additionally, there will be deliveries to both the power plant site and the pipeline sites of hazardous construction substances, such as gasoline, diesel fuel, oils, solvents, cleaners, paints, etc. **MITIGATION:** X Caltrans permits control vehicle size and weight. Condition: **TRANS-1**. X California Highway Patrol and Caltrans permits control transport of hazardous substances. Condition: **TRANS-2**. X Construction-impacted roadways will be restored to their pre-construction condition. Condition: **TRANS-4**. Operation: There will be 10 truck deliveries per month to the power plant site of hazardous materials, such as aqueous ammonia, sulfuric acid, sodium hypochlorite, sodium hydroxide, gasoline, etc. Deliveries of hazardous materials will be over pre-arranged routes selected for their safety features, including the absence of obstructions and curves, and minimal railroad traffic. **MITIGATION:** X Hazardous materials haulers must be specially licensed by the California Highway Patrol. Condition: **TRANS-2;** See also **HAZARDOUS MATERIALS** section. References: AFC p. 6.4-4; SA Traffic & Transportation, pp. 4.9-7, 8.		
Parking	**MITIGATION**	**None**	**YES**
	Construction: Off-street parking is available for construction workers and delivery trucks at the site. Existing construction worker parking will be adequate if the cogeneration project, the MTBE phase-out project, and a turnaround coincide. **MITIGATION:** X The Project Owner's Traffic Control Plan will mitigate on-site construction parking impacts caused by the coincidence of the cogeneration project, the MTBE project, and a turnaround. Condition: **TRANS-3** & **TRANS-5.** Operation: Adequate on-site parking is available for power plant personnel. *Reference: SA Traffic & Transportation, pp. 4.9-7, 8.*		

CONSTRUCTION TRAFFIC – GENERAL

The construction of the power plant causes additional trips by construction workers and delivery trucks to and from the site, increasing daily traffic volumes on the freeways and local streets. The potential impact of the project is measured by the LOS (Level of Service) of the surrounding roadway segment based upon average daily traffic volume. LOS is measured in a range from LOS A to LOS F. A LOS of A refers to little or no congestion, whereas LOS F is

heavy congestion with significant delays and significantly reduced travel speeds. (AFC p. 6.4-3; SA Traffic & Transportation, p. 2.)

Congestion

Construction: Workers and heavy delivery trucks, including those carrying oversized loads, will access the site via Valero Gates 4 and 9 on Park Road. **(See TRAFFIC & TRANSPORTATION Figure 1 & 2**) Gate 9 will be used by construction workers; Gate 4 will be used by trucks delivering construction supplies and equipment. Park Road is a two-lane City of Benicia Road that runs parallel to and west of I-680, bordering the refinery on its east side. Park Road is accessed from the south and west by the Bayshore Road exit from I-680. Bayshore Road is a two-lane City of Benicia road from the southeastern part of Benicia that runs along the east side of I-680 and crosses to end at Park Road across from Gate 4.

Industrial Way provides access to Park Road from the north by an exit from I-680. Industrial Way is a two-land road connecting parts of the Benicia Industrial Park on both sides of I-680. I-680 provides access from the north, connecting to I-80 at Cordelia. I-680 also provides access from Contra Costa County to the south over the Benicia-Martinez Bridge. I-680 is a four-lane freeway north of the Bridge; and a six-lane freeway south of the merger with I-780. I-780 is a four-lane freeway from the north end of the Benicia-Martinez Bridge to the City of Vallejo.

Construction commuting will have two 3-month peaks of 150 workers during the 12 month construction period. Construction worker commuting is expected as follows:

- 60% from the south across the Benicia-Martinez Bridge;
- 17% from the north on I-680;
- 20% from the west on I-780; and
- 3% from Benicia.

The intersection of Park Road and Bayshore Road is currently operating at a LOS of C. The Park Road and Industrial Way intersection has a LOS of B. Signal lights control both intersections. The northbound I-680 exit at Bayshore Road has a LOS of A during the morning peak commute hours. I-680 traffic on the Benicia-Martinez Bridge is at capacity during peak commutes, southbound in the morning and northbound in the evening. However, project workers would largely be reverse commuting. Consequently, the I-680 southbound evening commute has a LOS of C on the freeway and D on the Bridge itself. The I-780 westbound evening commute has a LOS of D. The Circulation Element of the General Plan of the City of Benicia accepts a worst-case LOS of D for project traffic impacts at city intersections. Caltrans accepts a worst-case LOS of E on Bay Area freeways.

The most impacted intersection would be Park and Bayshore Roads, which would change from a LOS of C to a D during the evening peak commute hours for each of the two 3-month construction peaks. This impact is acceptable under City of Benicia LOS criteria.

Truck traffic for the project is expected to reach 20 construction trucks per day during the peak construction period and 10 trucks per day for the remaining months of construction. Truck traffic is expected to follow routes very similar to the workforce. The only difference is that truck traffic will enter and leave the refinery through Gate 4. This gate is used for truck access to the refinery from Bayshore Road. No project truck traffic is expected on East 2nd Street. (AFC p. 6.4-1-4; SA Traffic & Transportation, pp. 4.9-4-7.)

MITIGATION:

- X The Project Owner's shall prepare a Traffic Control Plan to assure that added peak commute traffic does not create unacceptable congestion impacts. To achieve this goal, the Project Owner will maintain a vehicle count and coordinate with the City of Benicia to use one or more measures, such as carpooling, staggered arrival and departure times, use of alternative access points, and flagman traffic control. Condition: **TRANS–3**.

Power Plant Operation: Operation of the generating plant would be 5 or fewer workers on the day shift and fewer at night. This is 3% of the construction force analyzed above.

The facility will have truck traffic associated with the deliver of various cleaning chemical, gasoline and diesel fuel, lubricants, aqueous ammonia, sulfuric acid and other hazardous material associated with plant operation. It is expected that there will be ten truck deliveries per month to the operating facility. This would result in one truck trip per three days. It is assumed that the truck routes would travel to the plant site by way of I-680 and Bayshore and Park Roads. These additional truck trips along with the vehicle trips associated with operational personnel would not change the LOS. (AFC p. 6.4-4; SA Traffic & Transportation, p.4.9-8)

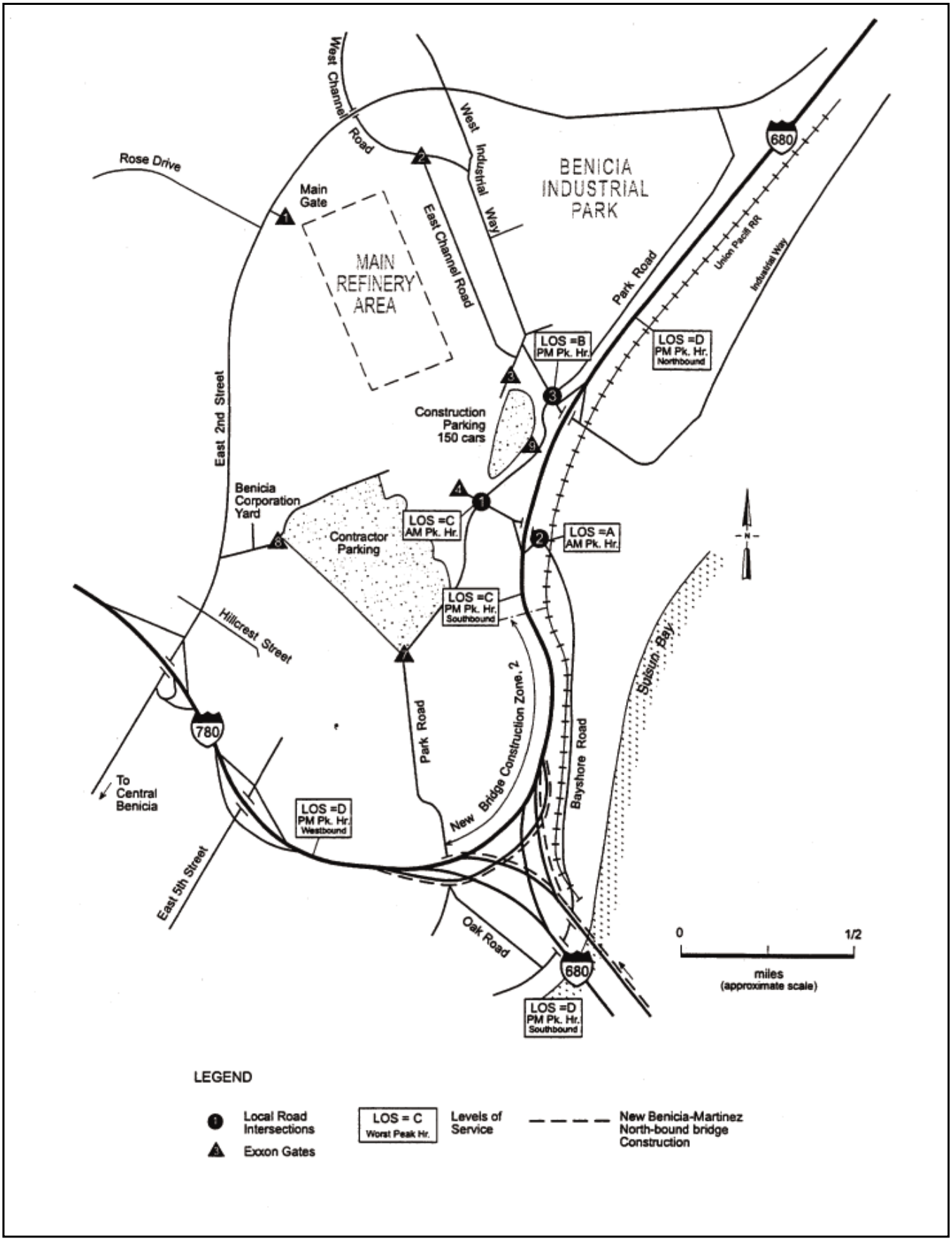
Safety

Construction: Construction will require the use of large vehicles, occasionally including oversize or overweight trucks. Additionally, there will be deliveries to the power plant site of hazardous construction substances, such as gasoline, diesel fuel, oils, solvents, cleaners, paints, etc. (AFC p. 6.4-4; SA Traffic & Transportation, p. 4.9-8.)

MITIGATION:

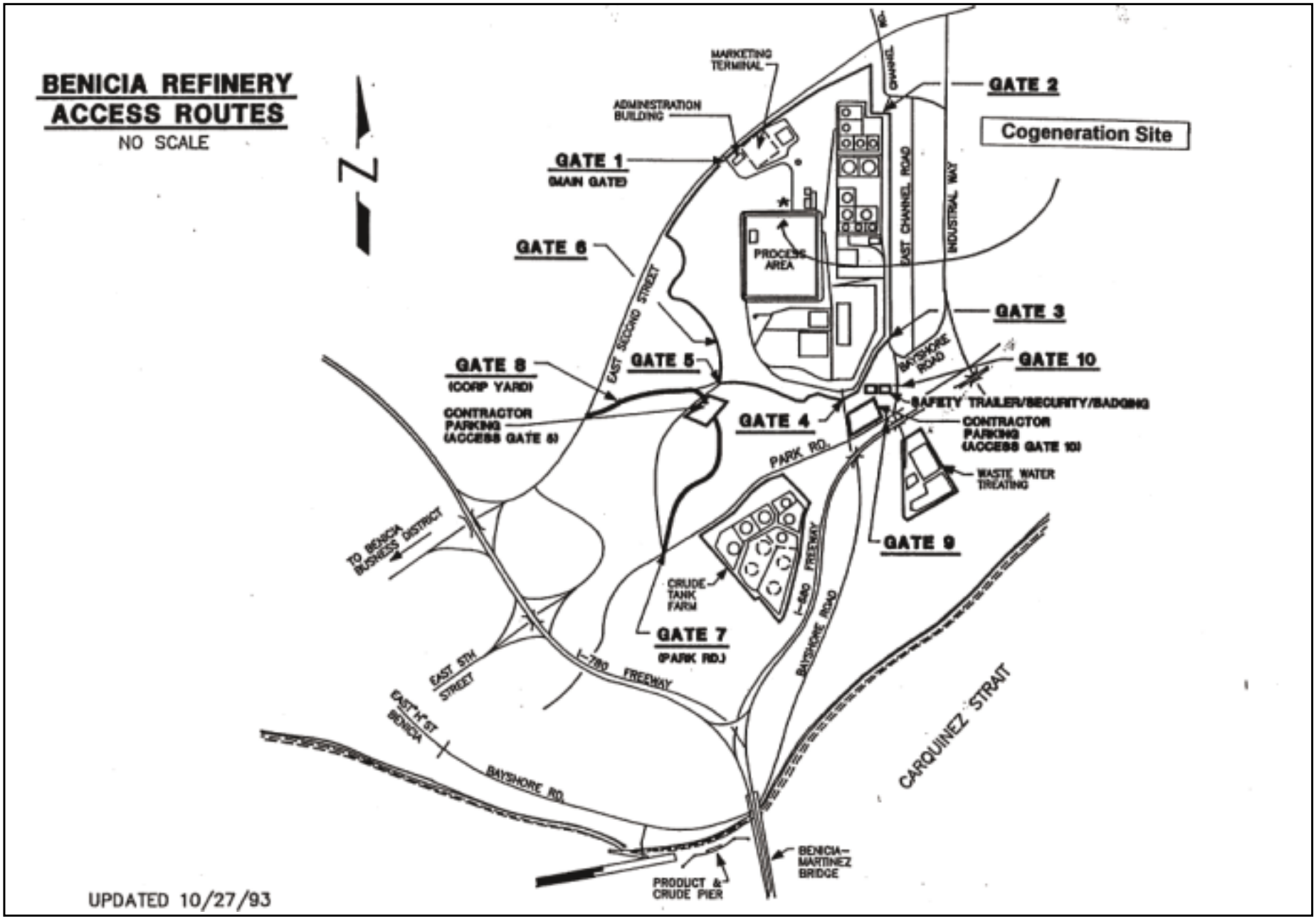
- X Caltrans permits control vehicle size and weight. Condition: **TRANS–1**.
- X California Highway Patrol and Caltrans permits control transport of hazardous substances. Condition: **TRANS–2**.

Traffic and Transportation - Figure 1
Valero Cogeneration Project



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2001
SOURCE: AFC Figure 6.4-1

Traffic and Transportation - Figure 2
Valero Cogeneration Project



SOURCE:AFC

Operation: There will be truck deliveries to the power plant site of hazardous materials, such as aqueous ammonia, sulfuric acid, sodium hypochlorite, sodium hydroxide, gasoline, etc. Deliveries of hazardous materials will be over pre-arranged routes selected for their safety features, including the absence of obstructions and curves, and minimal railroad traffic. (AFC p. 6.4-4; SA Traffic & Transportation, p. 4.9-8.)

MITIGATION:

- X Hazardous materials haulers must be specially licensed by the California Highway Patrol. Condition: **TRANS–2** (See also **HAZARDOUS MATERIALS** section.)

Parking

Construction: Off-street, on-refinery parking is available for construction workers and delivery trucks at the power plant site. The refinery has two parking areas used primarily for workers doing construction and maintenance projects. Since the two parking lots (i.e. lots at Gate 8 and Gate 9) allotted to temporary employees have a total capacity of 850 spaces and the number of total workers is not reasonably expected to exceed 548 (see **Cumulative Impacts**, below), there will be sufficient existing parking capacity. Valero has further stated that in the event of an turnaround requiring 500 dayshift workers, that it will reduce the number of existing, temporary contractors by 100 to provide additional parking spaces, and schedule most turnaround worker arrivals after the departure of the day shift.

When the worst case- turnaround workforce of 500-day shift workers is added, the total peak workforce would be 800. With a combined temporary worker parking lot capacity of 850, in the event of a worst-case turnaround, parking would still be sufficient. Therefore, there is no impact. (Supp. SA Traffic & Transportation, p. 76)

Valero agrees not to use unspecified open space for parking for the project.

MITIGATION:

- X The Project Owner's Traffic Control Plan will mitigate on-site construction parking impacts caused by the coincidence of the cogeneration project, the MTBE project, and a turnaround. Condition: **TRANS-3 & TRANS-5.**

Operation: Adequate on-site parking is available for power plant personnel.

Cumulative Impacts

The construction of the project could result in a decrease in the LOS to unacceptable levels if it runs concurrently with other construction or maintenance projects. The refinery is concurrently conducting a methyl tertiary butyl ether (MTBE) phase-out project. The MTBE project is scheduled to have a peak workforce of 100. Valero has also stated that 150 temporary contractors are typically working in the refinery. Therefore, Valero has estimated

that a total of 250 contract workers will be involved in refinery activities unrelated to the cogeneration project. When the project workforce of 150 is added, the total peak workforce is expected to be 400.

Valero may also have an unscheduled "turnaround" (i.e. a shutdown of a major part or all of the refinery for approximately one month in order to commence a repair or maintenance operation). Such a turnaround would most likely occur in the event that a major repair was needed, in that maintenance activities are generally scheduled. Valero has provided a likely estimate turnaround workforce estimate of up to 148-day shift workers, and a worst-case turnaround workforce estimate of 500-day shift personnel. Historically, a Valero refinery turnaround requiring 500-day shift workers, and 300 on a night shift, has occurred approximately once every two years. Thus, a major turnaround has the potential to require up to 800 workers altogether, with 500 assigned to a 10-hour day shift from 7:30 a.m. to 6 p.m. The 300 night shift contractors would arrive shortly before their shift begins at 6 p.m.

Valero has stated that if a turnaround of this magnitude is needed, that it would transfer 100 of the existing temporary contractor group to the turnaround workforce, leaving the existing contractor group with a total of 50.

The MTBE phase-out project's traffic will be directed along Park Road, which would result in a reduction in the LOS for some intersections, but these intersections would be maintained at an LOS of D or better. This is not considered significant as the LOS would be maintained at acceptable levels, and a decline in LOS would exist for only six months or less.

The cogeneration project's greatest traffic impact is on the intersection of Park and Bayshore Roads. The LOS for this intersection could potentially change from a C to a D during the project construction phase. This is an acceptable LOS. However, LOS at this intersection would deteriorate in the event of an unscheduled major turnaround. With estimated 2002 traffic in the critical PM peak period, the Bayshore/Park Road intersection can accommodate 610 (i.e., 300 workers for the project, the MTBE project, existing contractor group, plus up 310 for a turnaround) Valero temporary workers, and maintain an LOS of D maximum. LOS would drop to Level E if Valero had 730 temporary workers, and there were no mitigation measures. While this LOS E is unacceptable under the City of Benicia traffic LOS standards, actually reaching it appears to be unlikely for the following reasons:

- Day shift turnaround workers would be leaving after the PM peak hour (i.e. they would be working a 10 hour shift from 7:30 a.m. to 6 p.m.); and
- If a major turnaround is needed, Valero will implement traffic impact mitigation measures.

Valero has stated that, in addition to 150 cogeneration project-related workers going through Valero Gate 9, up to 148 workers involved in a potential turnaround could come from Gate 7 without exceeding the PM peak capacity of the Bayshore/Park Road intersection. The LOS at this intersection could go from a C to a D, which is an acceptable level.

Given the expected Valero temporary project workforce of 400, an additional 148 workers would result in a total of 548. Valero has proposed traffic impact mitigation options involving

trigger levels in the event of a turnaround requiring more than 148 workers. In this event, if the worst case of 500 day shift workers is needed, Valero would transfer 100 of the temporary contractors to the turnaround group, and ensure that the day shift turnaround group departed after the PM peak time.

Given the MTBE phase-out project, and the possibility of a turnaround, Valero will need to coordinate its construction activity to minimize peak traffic volume and maintain acceptable LOS for the area roadways and intersections. Valero will need to closely coordinate its activity with the City of Benicia to ensure that any traffic increases remain at levels that are acceptable to the City. Similarly, Valero will need to closely coordinate its activity with Caltrans. This coordination could include the following mitigation measures:

- Providing someone to direct traffic at the impacted intersections during the peak period when construction traffic is leaving the site;
- Stagger the construction work hours for the different projects to reduce traffic impacts at the PM peak hour;
- Investigate the possibility of changes in signal timing with the City of Benicia's Public Works Department; and
- Provide bi-weekly information to the City of Benicia's Public Works Department on expected traffic volume and travel routes.

To avoid a significant cumulative traffic impact the Project Owner will develop a Traffic Control Plan that will maintain the LOS for the area roadways at not less than D. (SA Supp. Traffic & Transportation, pp. 72–78.) See Condition **TRANS-3.**

Findings

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to traffic and transportation and all potential adverse traffic and transportation impacts will be mitigated to insignificance.

CONDITIONS OF CERTIFICATION

OVERWEIGHT & OVERSIZE VEHICLES

TRANS-1: The project owner shall comply with Caltrans and the local jurisdiction's limitations on vehicle sizes and weights. In addition, the project owner or its contractor shall obtain necessary transportation permits from Caltrans and all relevant jurisdictions for roadway use.

Verification: In the Monthly Compliance Reports, the project owner shall submit copies of any oversize and overweight transportation permits received during that reporting period. In addition, the project owner shall retain copies of these permits and

supporting documentation in its compliance file for at least six months after the start of commercial operation.

LICENSED HAZARDOUS MATERIALS HAULERS

TRANS-2: The project owner shall ensure that permits and/or licenses are secured from the California Highway Patrol and Caltrans for the transport of hazardous materials.

Verification: The project owner shall include in its Monthly Compliance Reports, copies of all permits/licenses acquired by the project owner and/or subcontractors concerning the transport of hazardous substances. The project owner shall maintain copies of these permits at the project site for inspection by the CPM.

TRAFFIC CONTROL PLAN

TRANS-3: The project owner shall develop a traffic control plan and implementation program, i.e. a specific action plan for traffic and transportation) that will ensure that the existing roadways and intersections continue to operate at a LOS acceptable to the City of Benicia. The project owner shall submit the project traffic control plan to the City of Benicia and Caltrans for review and comments, and to the CPM for review and approval.

The project owner shall on a biweekly basis, monitor the traffic conditions and vehicle counts at the access points to the project site, and at the onsite parking lots for the duration of the construction. The traffic counts for the emergency access routes for fire, police, and medical vehicles will also be reviewed on a biweekly basis. Results of these traffic counts will be presented to the City Traffic Engineer. Monthly traffic coordination meetings will be held with the project owner, the City Traffic Engineer, and the Police Department Patrol Lieutenant to review the data and to discuss the traffic measures that may be required to mitigate the impacts of the project. The project owner, in conjunction with the City Traffic Engineer, shall establish traffic trigger levels, above which various traffic mitigation measures will be considered and implemented. Measures to be implemented may include:

- Stagger work hours or work shifts to reduce traffic volumes during the peak traffic periods.
- Provide traffic control personnel at affected intersections or access points to manage traffic during peak periods.
- Provide temporary traffic control measures including signing, striping, and detours.
- Use alternate refinery access points to disperse ingress/egress traffic from the project.
- Provide additional temporary parking for construction workers as needed.
- Require trucks to make deliveries at specified times which avoid the morning and evening peak hour periods, and along designated routes to minimize traffic impacts at congested locations.
- Notify the City of Benicia Public Works staff immediately of any unscheduled turnaround, and related workforce traffic and parking requirements.

Verification: Parking lot vehicle counts and vehicle counts at all access points, records of all communications with the City of Benicia Traffic Engineer, and records of all steps taken to minimize traffic congestion will be available to the CPM upon request.

ROADWAY REPAIRS

TRANS-4: Following construction of the power plant and all related facilities, the Project Owner shall repair primary construction roadways to original or as near original condition as possible.

Verification: Thirty days prior to construction, the Project Owner shall photograph the primary construction roadways and shall provide the CPM and the local jurisdiction with a copy of these photographs. Within 30 days of the completion of project construction, the Project Owner will meet with the CPM and local jurisdiction to determine and receive approval for the actions necessary to repair those roadways to as near original condition as possible.

ON-SITE PARKING

TRANS-5: During construction of the power plant and all related facilities, the project owner shall provide on-site parking.

Verification: At least 60 days prior to any earth moving or disturbance activity, the project owner shall submit a parking and staging plan for all phases of project construction to the City of Benicia for review and comment, and to the CPM for review and approval.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

TRAFFIC & TRANSPORTATION

APPLICABLE LAW	DESCRIPTION
FEDERAL	
49 CFR §171-177	Governs the transportation of hazardous materials, including the marking of the transportation vehicles.
14 CFR §77.13(2)(i)	Requires applicant to notify FAA of any construction greater than an imaginary surface as defined by the FAA.
14 CFR 77.17	Requires applicant to submit Form 7460-1 to the FAA. VALERO has received approval.
14 CFR §§77.21, 77.23 & 77.25	Regulations which outline the obstruction standards which the FAA uses to determine whether an air navigation conflict exists.
STATE	
California State Planning Law, Government Code §65302	Requires each city and county to adopt a General Plan consisting of seven mandatory elements to guide its physical development, including a circulation element.
CA Vehicle Code §35780	Requires approval for a permit to transport oversized or excessive load over state highways.
CA Vehicle Code §31303	Requires transporters of hazardous materials to use the shortest route possible.
CA Vehicle Code §32105	Transporters of inhalation hazardous materials or explosive materials must obtain a Hazardous Materials Transportation License.
California Department of Transportation Traffic Manual, Section 5-1.1	Requires Traffic Control Plans to ensure continuity of traffic during roadway construction.
Streets and Highways Code, Division 2, Chapter 5.5, Sections 1460-1470	Requires Encroachment Permits for excavations in city streets.
LOCAL	
City of Benicia, General Plan, Circulation Element	Establishes traffic policies for the City.

VISUAL RESOURCES

	POWER PLANT SITE	*CUMULATIVE IMPACTS*	*LORS COMPLIANCE*
Objectionable Appearance	**MITIGATION**	**None**	**YES**
	Construction: Construction equipment at the power plant site will have a temporary, and thus insignificant, visual impact. Operation: The proposed cogeneration project is located entirely in the Valero Benicia Refinery, an existing industrial setting with structures of comparable height and visual mass which mitigates the added visual impact of the project. **MITIGATION:** X The Project Owner shall treat project structures in colors to be compatible with the existing refinery. Conditions **VIS-1.** *References: AFC p. 6.5-1-3; SA Visual Res., pp. 4.10-2–3.*		
View Blockage	**None**	**None**	**YES**
	The power plant, itself, does not block views of any identified scenic features. *References: SA Visual Res., p. 4.10-5.*		
Scenic Designation	**None**	**None**	**YES**
	There are no scenic designations related to the project viewshed. *Reference: SA Visual Res., p. 4.10-5.*		
Lighting	**MITIGATION**	**None**	**YES**
	Construction: Limited construction during nighttime hours will require lighting, which will be temporary, and thus insignificant. Operation: Power plant lighting could cause nighttime visual impacts, unless mitigated by designing hooded or shielded lighting consistent with worker safety. **MITIGATION**: X Consistent with worker safety requirements, the Project Owner shall install project lighting so that light bulbs and reflectors are not visible from public viewing areas and illumination of the vicinity and the nighttime sky is minimized. Condition**: VIS-2.** *References: AFC p. 6.5-4; SA Visual Res., pp.* 4.10-*8-9.*		
Visible Plume	**Insignificant**	**Insignificant**	**YES**
	Power plant cooling is accomplished through evaporation of circulating water through cooling towers, creating a water-vapor plume that will be visible for a limited number of hours per year usually in winter and at night. *Reference: AFC p. 6.5-4; SA Visual Res., pp. 4.10-6-8.*		

VISUAL RESOURCES - GENERAL

Visual resources analysis has an inherent subjective aspect. However, the use of generally accepted criteria for determining impact significance and a clearly described analytical approach aid in developing an analysis that can be readily understood.

The CEQA Guidelines defines 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 (Cal. Code Regs., tit.14, § 15382). (AFC p. 6.5-2.)

Objectionable Appearance

Construction: Construction of the proposed power plant would cause temporary visual impacts due to the presence of equipment, materials, and workforce. These impacts would occur at the proposed power plant site and construction laydown areas over a 6 to 8-month period of time. Construction would involve the use of heavy construction equipment, temporary storage and office facilities, and temporary laydown/staging areas. These structures and pieces of equipment would be stored on and adjacent to the project site in an area already exhibiting industrial visual character. Thus, power plant construction would result in an adverse but not significant visual impact.

Operation: The project region is situated on the north side of the Carquinez Straits, east of San Pablo Bay and west of Suisun Bay. The City of Benicia is located at the junction of State Route (SR)-780 and SR-680 and has scenic views of the waterfronts and Bays to the south as well as rolling hills to the northwest. The project would be built within the Valero refinery, which is within a small valley in the industrial park among the hills northeast of downtown Benicia. Parts of the refinery are visible from surrounding roads, highways, commercial and residential areas.

The site is industrial in appearance, exhibiting complex forms and lines and geometric shapes. The site is dominated by the existing oil refinery and is situated between SR 780 to the west, SR 680 to the east, Pine Lake to the south, and East 2nd Street to the west and north. Within the refinery, the tall structures are painted green while the shorter ones are painted yellow. These colors blend in with the color of the trees and hills during the dry season. The immediate project vicinity includes commercial facilities to the east, and open fields and residences west, south and north of the site. The visual quality of the proposed site and vicinity is low to moderate.

The major components of the project include two combustion turbine generators, two heat recovery steam generators (HRSG), a three cell cooling tower, fuel compression facilities, approximately 1,000 feet of new refinery fuel gas line and 500 feet of new natural gas supply line, and piping, instruments, pumps, and other equipment. In terms of the most notable features of the project, the cooling tower (25 feet high), and the HRSG stack (80 feet high),

would be the most visible. In addition, the cooling tower would generate plumes that could rise approximately 100 feet during certain times of the year.

Viewer Exposure

Most views of the power plant site are limited to adjacent roadways, commercial enterprises and residences near the refinery area. The refinery is particularly visible to motorists driving south on SR 680. The cogeneration project would not be visible from either SR-780 or SR-680. With the exception of a few residences to the west, south, and north, the refinery and rolling hills will essentially block views of the project. Viewers would be occupants of residences and commercial buildings in the adjacent area. The refinery is a co-dominate feature in the landscape in conjunction with the rolling hills to the west, north and east. Residents to the west, south, and north of the project site have views of the refinery. Residences along Panorama Drive to the west, East Fifth Street to the south and Lake Herman Road to the northeast have the best visibility of the refinery.

A few residences to the north, west and south will be able to see a portion of the 80 foot tall HRSG stack and the rare plume it will create, as well as the plumes from the three-cell cooling tower. Most of the project structures will be hidden or obscured by the much larger and visually dominant refinery. Moreover, there are about a dozen stacks at the refinery that are significantly taller than the HRSG, including a 462 foot concrete stack.

Due to the long-term nature of visual exposure that would be experienced from residences, and the sensitivity with which people regard their places of residence, residential viewers are considered to have high viewer concern. Viewer concern is rated moderate for commuters. Workers and occupants of industrial, commercial, and office buildings are attributed low viewer concern since the focus of their attention is interior to their location.

The rare HRSG plume and more frequent cooling tower plumes will be visible to commuters driving south on SR 680. The viewshed of the plumes would encompass the immediate project vicinity and extend to the roadways and viewing areas within a couple of miles. However, as discussed below, the project plumes would be considerably smaller than the plumes generated by the refinery.

The underground gas and water supply pipeline and electric transmission cables will be located within the refinery and would not be visible during project operation. However, pipeline and transmission line construction activities, materials, and personnel may be visible to some workers in the adjacent commercial and industrial areas where the photograph from Key Observation Point (KOP)-3 was taken. (AFC p. 6.5-1-2; SA Visual Res., pp. 4.10-2-3.)

Key Observation Points

The Applicant, with input from Energy Commission staff, selected three Key Observation Points (KOPs), whose locations are depicted in **VISUAL RESOURCES Figure 1**. The following paragraphs briefly summarize the concluding assessments of overall visual sensitivity at each KOP. Overall visual sensitivity takes into account existing landscape visual quality, viewer concern, and overall viewer exposure.

KOP 1 East 5th Street

KOP 1 represents the view looking north from East Fifth Street approximately one mile south of the proposed project. (**VISUAL RESOURCES Figure 2** ("before") & **VISUAL RESOURCES Figure 5** ("after")). The viewpoint is located next to St. Dominic's Cemetery and Church where a high number of residential viewers are present and the duration of exposure is long. Residents in this location are exposed to several plumes generated periodically at the refinery. Overall visual sensitivity of the landscape is moderate to high. This conclusion is based on the low to moderate visual quality of the view looking north, given the refinery in the mid-ground, and the more scenic hillsides in the background, the long duration of view, and the high visual concern but moderate to high exposure of the residents in this area.

KOP2 Panorama Drive

KOP 2 (**VISUAL RESOURCES Figure 3**) represents the view from about a mile west of the project site across the street from a residence at 127 Panorama Drive in an area where a moderate number of viewers reside and the duration of exposure is long. The project would be moderately visible in the mid-ground with scenic vistas of Suisun Bay in the background. Viewers see plumes generated by the refinery at various times of the year. The view looking east is of moderate quality and residents have a high level of concern. Thus, the overall sensitivity of the landscape is moderate to high.

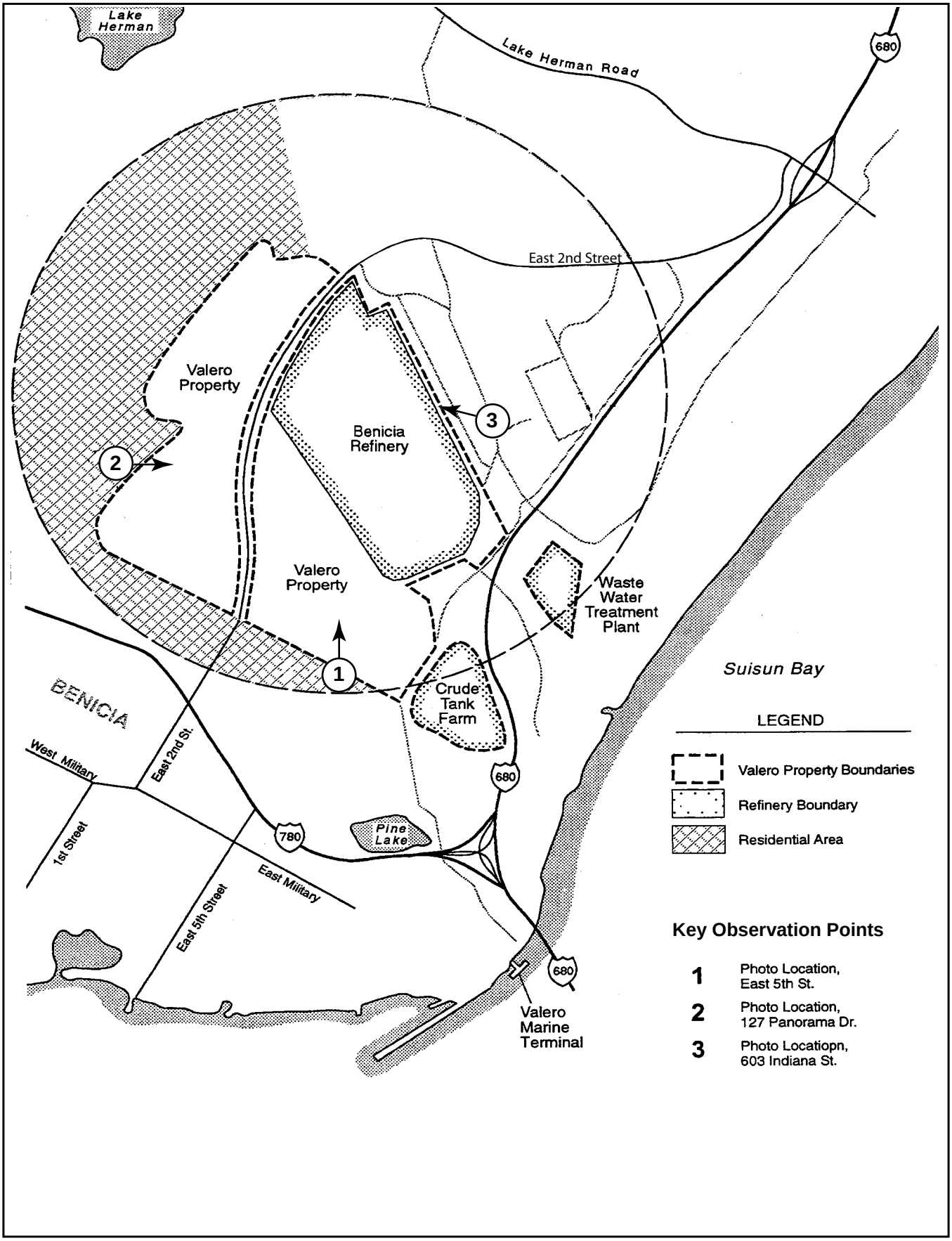
KOP3 Indiana Street

KOP 3 is from 603 Indiana Street Warehouses, about .25 mile east of the refinery. (**VISUAL RESOURCES Figure 4**). Viewers from this location are in close proximity to the project area with the refinery in the foreground, and the visibility of the project would be moderate to high. There is moderate to high viewer exposure, low visual quality due to the industrial and commercial character of the area, and low to moderate viewer concern. Several plumes are visible at different times of the year. The duration of the view is low to moderate. Therefore, the overall visual sensitivity of the landscape is low to moderate. (SA Visual Res., pp. 4.10-3-4.)

MITIGATION:

- X The Project Owner shall treat project structures in colors to be compatible with the existing refinery. Conditions **VIS-1.**

VISUAL RESOURCES - Figure 1
Location of Key Observation Points



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2001
SOURCE: AFC Figure 6.2-1

VISUAL RESOURCES - Figure 2

KOP 1 - Existing view looking North towards the Refinery from the Residential Area at East Fifth St., one mile South of the Refinery.

CALIFORNIA ENERGY COMMISSION SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2001

SOURCE: Commission Staff Photo taken on 6/19/2001

VISUAL RESOURCES - Figure 3

KOP 2 - Existing view looking East from viewpoint near Residence at 127 Panorama Drive, .5 miles West of Refinery.

CALIFORNIA ENERGY COMMISSION SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2001

SOURCE: Commission Staff Photo taken on 6/19/2001

VISUAL RESOURCES - Figure 4

KOP 3 - Existing view from Commerical Area at 603 Indiana St. looking Northwest adjacent to the Refinery.

CALIFORNIA ENERGY COMMISSION SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2001

SOURCE: Commission Staff Photo taken on 6/19/2001

VISUAL RESOURCES - Figure 5

KOP 1 - Simulation of Proposed Plant looking North towards the Refinery from the Residential Area at East Fifth St., one mile South of the Refinery.

CALIFORNIA ENERGY COMMISSION SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2001

SOURCE: Commission Staff Photo taken on 6/19/2001

View Blockage

View blockage describes the extent to which any previously visible landscape features are blocked from view by the project. Blockage of higher quality landscape features by lower quality features causes adverse impacts.

Scenic vistas of high visual quality that were identified within the viewshed (area of potential visual effect) include the Suisun Bay, Carquinez Strait, and Mt. Diablo. The project will not significantly degrade the overall landscape or scenic vistas beyond the current impact of the refinery. The HRSG stack and cooling tower plumes will blend in with refinery structures and normal operations. KOP-2 is the only KOP with a good view of the scenic vistas. The addition of the project would cause low to moderate visual change. It would cause a low degree of contrast with existing structures, be subordinate to the refinery, and would not block views of the scenic vistas. Given the low to moderate overall visual change, the project would have a less than significant impact on the identified scenic vistas as viewed from KOP-2, as well as the viewshed at KOP 1 and 3. (SA Visual Res., p. 4.10-5.)

Scenic Designation

There are no state designated scenic highways within the project viewshed. As indicated in the Visual Section of the AFC, there is a locally designated scenic vista on SR 680 between Morrow Lane and the Benicia-Martinez Bridge. The project will not be visible from this scenic vista or any portion of SR-680 or SR-780. However, the cooling tower plumes might be briefly visible to motorists for a short period of time depending on wind direction. On the other hand, according to the Benicia General Plan, the scenic vista is to the southeast toward Suisun Bay and away from the refinery and project. Therefore, the project would not have a substantial adverse effect on scenic resources. (SA Visual Res., p. 4.10-5.)

Lighting

The proposed project would require nighttime lighting for operational safety and security. To reduce the offsite impacts from this night lighting, Valero has committed to directing the lights towards the middle of the property and away from the outer site boundaries to reduce light scatter and glare. Additionally, fixtures are to be of the non-glare type. These measures as part of a comprehensive lighting plan will mitigate any potentially significant adverse visual impacts from lighting. (AFC p. 6.5-4; SA Visual Res., pp. 4.10-5, 8-9.)

MITIGATION:

- X Consistent with worker safety requirements, the Project Owner shall install project lighting so that light bulbs and reflectors are not visible from public viewing areas and illumination of the vicinity and the nighttime sky is minimized. Condition: **VIS-2.**

Visible Plumes

Since power plant cooling is accomplished through evaporation of circulating water through cooling towers, there will be a water-vapor plume that will be visible for a limited number of hours per year depending on meteorological conditions. Additionally, duct burning can cause a visible water vapor plume from the taller HRSG exhaust stack during similar meteorological conditions. Whether the plume would be visible also depends on whether the observation is made during daylight or nighttime hours. The height and width of the visible water-vapor plume from the cooling towers or HRSG will depend on meteorological conditions.

Based on the results of the various plume visibility models, the new cooling tower plumes are predicted to be smaller than the existing refinery cooling tower plumes. Such a result is consistent with the fact that the design-cooling load for the new cooling towers is significantly smaller than the cooling loads of the two existing refinery cooling towers. The cooling tower plumes would be visible for more than 10 percent of the time, which exceeds Energy Commission staff's frequency criterion for a potential significant visual impact. However, considering the number and size of the existing visible plumes at the site, the large size of the refinery site, and the overall industrial character of the site; the cooling tower visible plumes from the project do not cause a noticeable change in the character or quality of the views surrounding the Valero refinery. Therefore, the cooling tower plume does not cause a significant visual impact.

Modeling of the HRSG exhaust stack showed that a plume will not form under normal weather conditions at the project site, but could form under infrequent extreme cold weather conditions. (AFC p. 6.4-4; SA Visual Resources, p. 4.10-8.)

Cumulative Impacts

Cumulative impacts to visual resources would occur where project facilities or activities (such as construction) occupy the same field of view as other built facilities or impacted landscapes. It is also possible that a cumulative impact could occur if a viewer's perception is that the general visual quality of an area is diminished by the proliferation of visible structures (or construction effects such as disturbed vegetation), even if the new structures are not within the same field of view as the existing structures. The significance of the cumulative impact would depend on the degree to which (1) the viewshed is altered; (2) visual access to scenic resources is impaired; (3) visual quality is diminished; or (4) the project's visual contrast is increased.

In this case, the project structures and plumes will minimally alter the viewshed. The visual contrast and view blockage would be low, the project would be subordinate to the refinery, and the overall visual change would be low to moderate. In addition, there are no other projects planned in the refinery area. Therefore, the cumulative visual effects of project structures on the viewshed would not be significant.

Considering the two fairly large existing visible plumes at the site, the size of the site, the overall industrial character of the refinery, the relatively small project cooling tower plumes,

the project will not cause a noticeable change in the character or quality of the views surrounding the Valero refinery. The cumulative effect of additional plumes added to current operations would not be a significant change. (SA Visual Res., p. 4.10-9.)

Findings

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to visual resources and all potential adverse visual resource impacts will be mitigated to insignificance.

CONDITIONS OF CERTIFICATION

STRUCTURE COLOR PLAN

VIS-1: Prior to first turbine roll, the Project Owner shall treat the project structures, buildings, and tanks in appropriate colors or hues that minimize visual intrusion and contrast by blending with the surrounding structures and equipment. The Project Owner shall submit a color treatment plan for CPM approval prior to implementation.

Verification: At least 60 (sixty) days prior to ordering the first structures that are color treated during manufacture, the project Owner shall submit its proposed plan to the to the City of Benicia for review and comment and to the CPM for review and approval. If the CPM notifies the Project Owner that any revisions of the plan are needed before the CPM will approve the plan, within 30 days of receiving that notification, the project owner shall submit to the CPM a revised plan.

Within seven (7) days of completing color treatment, the Project Owner shall notify the CPM that the project is ready for inspection.

SHIELDED LIGHTING

VIS-2: Prior to first turbine roll, the Project Owner shall design and install all lighting such that light bulbs and reflectors are not visible from public viewing areas and illumination of the vicinity and the nighttime sky is minimized during both construction and operation. To meet these requirements:

Protocol: The project owner shall develop and submit a lighting plan for the project to the CPM for review and approval. The lighting plan shall require that:

- Lighting is designed so that exterior light fixtures are hooded, with lights directed downward or toward the area to be illuminated and so that backscatter to the nighttime sky is minimized. The design of this outdoor lighting shall be such that the luminescence or light source is shielded to prevent light trespass outside the project boundary;

- Exterior lighting shall meet the requirements of the American National Standards Practice for Industrial Lighting, ANSI/IES-RP-7;
- High illumination areas not occupied on a continuous basis such as maintenance platforms or the main entrance are provided with switches or motion detectors to light the area only when occupied;
- The compliance complaint resolution form, or equivalent, will be used by plant operations to record all lighting complaints received and document the resolution of those complaints. All records of lighting complaints shall be kept in the on-site compliance file.

Verification: At least 60 days before ordering the exterior lighting, the Project Owner shall provide the lighting plan to the City of Benicia for review and comment and to the CPM for review and approval. If the CPM notifies the project owner that any revisions of the plan are needed before the CPM will approve the plan, within 30 days of receiving that notification the Project Owner shall submit to the CPM a revised plan. The project owner shall notify the CPM within seven days of completing exterior lighting installation that the lighting is ready for inspection.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

VISUAL RESOURCES

APPLICABLE LAW	DESCRIPTION
FEDERAL	
NA	There are no applicable Federal LORS for the section of visual.
STATE	
NA	There are no applicable State LORS for the section of visual.
LOCAL	
City of Benicia General Plan, Visual Character Section	Establishes goals pertaining to the appearance and enhancement of visual quality.

WASTE MANAGEMENT

	POWER PLANT SITE	CUMULATIVE IMPACTS	LORS COMPLIANCE
Excavation	**MITIGATION**	**None**	**YES**
	Contaminated soil may be encountered during construction excavation. **MITIGATION:** X Contaminated soils will be tested and, if appropriate, treated or disposed at a Class I landfill. Conditions: **WASTE-3 to WASTE-6.** *References: SA Waste Mgt., p. 4.11-5.*		
Construction Wastes	**MITIGATION**	**None**	**YES**
	Power plant construction will generate typical construction wastes, such as lumber, plastic, scrap metal, glass, excess concrete, empty containers, and packaging. These construction wastes are either recycled or disposed at a Class III landfill. **MITIGATION:** X The Project Owner shall prepare a waste management plan to assure the appropriate handling of wastes. Condition: **WASTE-2**. *References: AFC p. 6.11-4; SA Waste Mgt. p. 4.11-4.*		
Non-hazardous Wastes	**Insignificant**	**None**	**YES**
	Typical non-hazardous operation wastes include a small volume of maintenance-related trash, office trash, empty containers, broken or used parts, used packaging materials, and used air filters. These non-hazardous wastes will be routinely collected by a licensed hauler and disposed at a Class III landfill. *Reference: AFC p. 6.11-1, 3, 5; SA Waste Mgt., p. 4.11-6.*		
Hazardous Wastes	**MITIGATION**	**None**	**YES**
	Hazardous wastes will include recyclable materials such as used oil, filters, rags, etc. Non-recyclable hazardous wastes include oil absorbents, welding materials, paints, used grit, weak acids, used batteries, and asbestos and are properly disposed at Class I landfills. **MITIGATION:** X The Project Owner shall prepare a waste management plan. Condition: **WASTE-2.** X The Project Owner shall report any potential enforcement action related to waste management. Condition: **WASTE-1.** *Reference: AFC p. 6.11-2, 3, 4, 6; SA Waste Mgt., p. 4.11- 4, 5.*		
Disposal Capacity	**None**	**None**	**YES**
	The capacities of available Class I and Class III landfills far exceed the construction and operation wastes generated by this project. *Reference: AFC p. 6.11-5,6.*		

CONSTRUCTION WASTE MANAGEMENT - GENERAL

Different types of wastes will be generated during the construction and operation of the proposed project and must be managed appropriately to minimize the potential for adverse human and environmental impacts. These wastes are designated as hazardous or non-hazardous according to the toxic nature of their respective constituents. This analysis assesses the adequacy of the waste management plan with respect to handling, storage and disposal of these wastes in the amounts estimated for the project. The handling of project's wastewater, for which a National Pollutant Discharge Elimination System (NPDES) permit is required, is discussed in **WATER QUALITY.**

Excavation

If contaminated soil is encountered during construction, such contamination will be assessed using procedures that allow for identification of best disposal options. If the soil is classified as hazardous (according to RCRA and Cal. Code of Regs., title 22), the affected state and local agencies will be notified and the soil will be hauled to a Class I landfill or other appropriate soil treatment and recycling facility. (SA Waste Mgt., p. 4.11-5.)

MITIGATION:

- X Contaminated soils will be tested and, if appropriate, treated or disposed at a Class I landfill. Condition: **WASTE-1.**

Construction Wastes

Preparation and construction of the power plant will generate both hazardous and non-hazardous wastes. The non-hazardous component of the construction-related wastes will include waste paper, wood, glass, scrap metal, and plastics, from packing materials, waste lumber, excess concrete, insulation materials, and non-hazardous chemical containers. Management of these wastes will be the responsibility of the contractors. These wastes will be segregated, where practical, for recycling. Those that cannot be recycled will be placed in covered containers and removed on a regular basis by a certified waste handling contractor for disposal at a Class II or III facility.

The relatively small quantities of hazardous materials to be generated during this construction phase will mainly consist of used oil, waste paint, spent solvents, materials, used or batteries, and cleaning chemicals. These wastes will be recycled or disposed of at licensed hazardous waste treatment or disposal facilities. The construction contractor will be considered the generator of the hazardous waste produced during construction and will be responsible for compliance with applicable federal and state regulations regarding licensing, personnel training, accumulation limits, reporting requirements, and record keeping. Valero has in place a waste management plan to assure the appropriate handling of wastes.

MITIGATION:

- X The Project Owner shall prepare a waste management plan to assure the appropriate handling of wastes. Condition: **WASTE-2**.

Non-Hazardous Wastes

Under normal operating conditions, the typical, solid non-hazardous wastes will include routine maintenance-related trash, office wastes, empty containers, broken or used parts, and used packaging materials and air filters. Some of the wastes will be recycled to minimize the quantity to be disposed of in a landfill. The non-recyclables will be disposed of at a non-hazardous waste disposal facility. The volume of non-hazardous wastes from the proposed and similar gas-fired facilities is typically small and readily accommodated within area disposal facilities. For the proposed facility for example, such wastes are expected to be negligible compared to the capacity available Class III landfills. (AFC p. 6.11-5.)

Hazardous Wastes

The hazardous waste quantities generated by the project will be minimal. The operations-related hazardous wastes will include spent air pollution control catalysts, used oil and air filters, used cleaning solvents, and used batteries. Some of these wastes will be recycled. The non-recyclables will be disposed of in a Class I disposal facility. (AFC p. 6.11-6; Table 6.11-3.)

MITIGATION:

- X The Project Owner shall prepare a waste management plan. Condition: **WASTE-2**
- X The Project Owner shall report any potential enforcement action related to waste management. Condition: **WASTE-1**

Disposal Capacity

The Project Owner provided a listing of the four area non-hazardous (Class II or III) waste disposal facilities (Keller Canyon, West Contra Costa, Potrero Hills & Forward) available for use by proposed project (Table 6.11-1). The listing includes information on remaining capacity, location, and anticipated closure year. This information shows that the volume of the waste from project construction and operation would be insignificant relative to available disposal capacity. (AFC p. 6.11-2; Table 6.11-1.)

The Project Owner also provided a listing of the three major Class I landfills in California available for the disposal of hazardous wastes from the proposed and similar projects. These are Safety Kleen (Buttonwillow) in Kern County, Chemical Waste Management (Kettleman Hills) in Kings County, and Safety Kleen (Westmoreland) in Imperial County. There is a total of more than twenty million cubic yards of disposal space within these landfills. Thus, adequate disposal space would be available with respect to all hazardous wastes generated during the operational life of the proposed project. (AFC p. 6.11-2, 3.)

Cumulative Impacts

As described above, there is adequate capacity in the disposal facilities available with respect to the hazardous and non-hazardous wastes associated with the proposed project. Therefore, the wastes from the construction and operation of the proposed project and its related facilities will not significantly impact the capacity of these landfills and will not create a cumulative impact.

Finding

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to waste management and all potential adverse impacts related to waste management will be mitigated to insignificance.

CONDITIONS OF CERTIFICATION

WASTE MANAGEMENT ENFORCEMENT ACTION

WASTE-1: Once informed, the project owner shall notify the CPM of any impending waste management-related enforcement action by any local, state, or federal authority taken or proposed to be taken against the project itself, or against any waste hauler or disposal facility or treatment operator with which the owner contracts.

Verification: The project owner shall notify the CPM in writing within 10 days of becoming aware of an impending enforcement action. The CPM shall notify the project owner of any changes that will be required in the manner in which project-related wastes are managed.

WASTE MANAGEMENT PLAN

WASTE-2: Prior to the start of both construction and operation, the project owner shall prepare and submit to the CEC CPM, for review and comment, a waste management plan for all wastes generated during construction and operation of the facility, respectively. The plans shall contain, at a minimum, the following:

- A description of all waste streams, including projections of frequency, amounts generated and hazard classifications; and
- Methods of managing each waste, including treatment methods and companies contracted with for treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/reduction plans.

Verification: No less than 7 days prior to the start of construction, the project owner shall submit the construction waste management plan to the CPM for review. The operation waste management plan shall be submitted no less than 7 days prior to the start

of project operation. The project owner shall submit any required revisions within 20 days of notification by the CPM (or mutually agreed upon date). In the Annual Compliance Reports, the project owner shall document the actual waste management methods used during the year compared to planned management methods.

REGISTERD PROFESSIONAL ENGINEER/GEOLOGIST

WASTE-3: The project owner shall have a Registered Professional Engineer or Geologist, with experience in remedial investigation and feasibility studies, available for consultation during soil excavation and grading activities. The Registered Professional Engineer or Geologist shall be given full authority to oversee any earth moving activities that have the potential to disturb contaminated soil.

Verification: At least 7 days prior to the start of construction, the project owner shall submit the qualifications and experience of the Registered Professional Engineer or Geologist to the CPM for approval.

CONTAMINATED SOIL EXCAVATION

WASTE-4: If potentially contaminated soil is unearthed during excavation at either the proposed site or linear facilities as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the Registered Professional Engineer or Geologist shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and file a written report to the project owner and CPM stating the recommended course of action. Depending on the nature and extent of contamination, the Registered Professional Engineer or Geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If, in the opinion of the Registered Professional Engineer or Geologist, significant remediation may be required, the project owner shall contact representatives of the San Francisco Regional Water Quality Control Board, the Solano County Department of Environmental Health, and the Berkeley Regional Office of the California Department of Toxic Substances Control for guidance and possible oversight.

Verification: The project owner shall submit any reports filed by the Registered Professional Engineer or Geologist to the CPM within 5 days of their receipt.

SOIL SAMPLING

WASTE-5: The project owner shall conduct soil sampling for metals, herbicides, and polycyclic aromatic hydrocarbons (surface sampling only for PAHs) at the proposed site and transmission line sufficient to adequately characterize the nature and extent of any contamination which may be present.

Verification: The project owner shall submit soil sampling results (including all appropriate documentation) for metals, herbicides, and polycyclic aromatic hydrocarbons (surface sampling only for PAHs) to the CPM for approval 7 days prior to any earth moving activities, including those associated with site mobilization, ground disturbance, or grading as defined in the general conditions of certification.

SOIL MANAGEMENT WORKPLAN

WASTE-6: The project owner shall provide a soil management workplan providing the methods which will be used to properly handle and/or dispose of soil which may be classified as hazardous or contain contaminants at levels of potential concern. The workplan will discuss, as necessary, the reuse of soil on site in accordance with applicable criteria to protect construction or future workers onsite, disposal of soil to a Class I (hazardous) landfill, and disposal to a Class II or III landfill.

Verification: The project owner shall submit the soil management workplan to the CPM for approval 7 days prior to any earth moving activities, including those associated with site mobilization, ground disturbance, or grading as defined in the general conditions of certification.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

WASTE MANAGEMENT

APPLICABLE LAW	DESCRIPTION
FEDERAL	
42 U.S.C. §§6901-6992k, RCRA Subtitle C and D	Regulates non-hazardous and hazardous wastes. Laws implemented by the State.
40 CFR 260, et seq.	Implements regulations for RCRA Subtitle C and D. Implemented by the US EPA by delegating to the State.
Federal Clean Water Act, 33 U.S.C. §1251 et seq.	Regulates wastewater discharges to surface waters of the US. NPDES program administered at the State level.
STATE	
Public Resources Code §40000 et seq. (California Integrated Waste Management Act)	Implements RCRA regulations for non-hazardous waste.
Water Code §13000, et seq. (Porter-Cologne Water Quality Control Act	Regulates wastewater discharges to surface and groundwaters of California. NPDES program implemented by State Water Resources Control Board.
22 CCR §66262.34	Regulates accumulation periods for hazardous waste generators. Typically hazardous waste cannot be stored on-site for greater than 90 days.
Health & Safety Code §25100 et seq. (California Hazardous Waste Control Law)	Regulates hazardous waste handling/storing. Implemented by the San Bernardino Fire Department/City of Redlands Fire Department, Hazardous Materials Division.
LOCAL	
City of Benicia, General Plan Policy 4.7.5	Testing and remediation of potential toxic or unexploded ordinance sites.
City of Benicia, General Plan Policy 4.16	Requires hazardous waste management and disposal procedures.

This page intentionally blank.

WATER QUALITY & SOILS

	POWER PLANT SITE	CUMULATIVE IMPACTS	LORS COMPLIANCE
Erosion &, Sedimentation	**MITIGATION**	**None**	**Yes**
	Grading and excavation may also create the potential for transport of loosened soils by rainwater or on-site release of fluids. Existing, permanent catchment basins in the refinery complex and temporary containment barriers at the construction site can control potential sedimentation impacts to waterways or sensitive habitat. Grading and excavation activities potentially produce dust which can be transported off-site by wind. **MITIGATION:** X Prior to site clearing and grading, the project owner shall prepare erosion control and stormwater pollution prevention plans to contain and process runoff on-site and to prevent or contain any spill or leak of construction materials onto soils or into runoff waters. Condition: **WATER QUALITY-1** X To control airborne fugitive dust, the project owner shall water disturbed areas and apply chemical dust suppressants, apply gravel or paving to traffic areas, wash wheels of vehicles of large trucks leaving the site. Condition: **AQ-52 to AQ-54.** *References: AFC p. 6.13.1, 2; SA Soil & Water, pp. 4.12-8, 9.*		
Prior Contamination: Soil or Water	**MITIGATION**	**None**	**Yes**
	Though unlikely, soil contaminated by disposal practice or accidental spills or leaks may be encountered at the power plant site or along the pipeline during construction excavation. If the groundwater generated from the dewatering activities is determined to have some level of contamination, mitigation will be required in order to satisfy the discharge limits of the refinery's NPDES permit. **MITIGATION:** X Contaminated soils will be tested and, if appropriate, treated or disposed at a Class I landfill. Conditions: **WASTE-3 to WASTE-6** X Any groundwater that may need to be dewatered from the site will be tested and, as appropriate, treated prior to discharge. Condition: **WATER QUALITY-2.** *References: AFC p. 6.13-2; SA Soil & Water, p. 4.12-10.*		

	POWER PLANT SITE	CUMULATIVE IMPACTS	LORS COMPLIANCE
Drainage & Water Pollution	**MITIGATION**	**None**	**Yes**
	Stormwater drainage over compacted or graveled surfaces has the potential to impact off-site waterways or sensitive habitats by carrying contaminants deposited on the surface or by channeling volumes of fast moving water. The project owner proposes a no-discharge plan by which surface run-off will be collected in an catchment system and treated in the refinery's existing treatment plant before being discharged to the Carquinez Strait. Valero will not release any substance onto the power plant site soils that will degrade either surface water quality nor groundwater quality. Valero has existing storage for any hazardous and acutely hazardous materials in secure areas and/or in tanks with catchment basins to retain spills or ruptures. (See **HAZARDOUS MATERIALS.**) **MITIGATION:** X The project owner will handle, treat, and discharge runoff in accordance with its existing Storm Water Pollution Prevention Plan and NPDES permit, revised to include the project. Conditions: **WATER QUALITY-2 & WATER QUALITY-3.** *References: AFC p. 6.13-1, 5; SA Soil & Water, pp. 4.12-9, 10.*		
Wastewater	**MITIGATION**	**None**	**Yes**
	Wastewater will be generated at the plant in various systems, including circulating water system, evaporative cooler blowdown, heat recovery steam generator blowdown, plant drains, storm water runoff, etc. Valero plans to collect all plant wastewater streams for treatment in the refinery treatment plant before discharge to the Carquinez Strait in accordance with its existing NPDES permit. **MITIGATION**: X The project owner will handle, treat, and wastewater in accordance with its existing NPDES permit, revised to include the project. Conditions: **WATER QUALITY-2.** *References: AFC p. 6.13-1; SA Soil & Water, p. 4.12-8.*		

WATER QUALITY – GENERAL

This section analyzes potential effects on water quality and soil resources that could result from construction and operation of the project, specifically focusing on the potential for erosion and sedimentation and degradation of surface and groundwater quality.

Flooding is addressed in the **GEOLOGY** section of this decision. Solid waste and contaminated soil disposal is discussed in the **WASTE MANAGEMENT** section.

Erosion & Sedimentation

Accelerated wind and water-induced erosion may result from earthmoving activities associated with construction of the proposed project. Activities that expose and disturb the soil leave soil particles vulnerable to detachment by wind and water. Stormwater runoff, coupled with earth disturbance activities, can potentially enhance onsite erosion eventually resulting in off-site erosion and sedimentation.

The project is located within currently developed refinery. Altamont clay covers the entire site, underlain by bedrock consisting of mudstone with interbedded sandstone. This soil type occurs on dissected terraces and is used regionally for dry-farmed grain and pasture, wildlife habitat and recreation. The project site and construction laydown areas are not currently used for agriculture, nor have they been since before the refinery was developed in 1969. The soil has moderate erosion potential, low permeability and moderate water runoff characteristics. The clay and mudstone is moderately expansive, shrinking and swelling according to moisture content.

The project site is currently graded at two levels, and will be re-graded into one level grade using cut and fill techniques, and construction of a retaining wall in the cut slope, and possibly the fill slope. The maximum elevation difference along the cut slope is about 15 feet. The Altamont clay will be compacted as fill to support the generators and other structures.

Following construction, the site will be paved and stormwater will flow into the existing stormwater management system for treatment at the refinery's wastewater treatment plant before discharge into the Carquinez Strait. The project will make use of existing refinery laydown and staging areas, which are already graded and graveled or paved, and already have erosion control and storm management features in place.

The proposed transmission line will run underground for a distance of approximately 1,000 feet through the existing refinery development, and is estimated to disturb an area of about 0.2 acres. In addition, supply lines for gas and water will tie into existing pipelines within the developed refinery. These lines will include approximately 1,000 feet of refinery fuel gas line to supply the turbines, 500 feet of the natural gas line serving as backup fuel for the turbines, and 1,000 feet of water supply lines. There will be no new areas of disturbance as a result of bringing these utilities to the project site. After backfilling and compacting trenches for the proposed power and pipeline extensions, the soil surface will be protected with erosion control materials including gravel and paving.

About two acres of land will be disturbed during construction of the facility. The approximately two acres of soil that will be excavated and graded during construction will be subject to erosion. Best Management Practices (BMPs) for erosion control are proposed to be implemented and will be described in the Sediment and Erosion Control Plan.

Although construction will be regulated under a Sediment and Erosion Control Plan, a construction-related Storm Water Pollution Prevention Plan (SWPPP) and General Storm Water Permit for Construction are not required since the site development is less than 5

acres. However, for project operation, an existing SWPPP is being modified to account for site alterations and discharge as regulated under an existing NPDES Permit for the refinery. (AFC p. 6.13.1, 2; SA Soil & Water, pp. 4.12-8, 9.)

Prior Soil Contamination

Excavation at the power plant site or along the pipeline route may unearth soils contaminated by prior disposal practices or accidental spills or leaks. If contaminated soil is encountered during construction, such contamination will be assessed using procedures that allow for identification of best disposal options. If the soil is classified as hazardous (according to RCRA and CCR Title 22), the soil will be hauled to a Class I landfill or other appropriate soil treatment and recycling facility. (SA Soil & Water, p. 4.12-4, 10.)

If the groundwater generated from the dewatering activities is determined to have some level of contamination, mitigation will be required in order to satisfy the discharge limits of the refinery's NPDES permit (AFC p. 6.13-2; SA Soil & Water, p. 4.12-10.)

MITIGATION:

- X Contaminated soils will be tested and, if appropriate, treated or disposed at a Class I landfill. Condition: **WASTE-3 TO WASTE-6.**
- X Excavated soils will be covered or protected from wind erosion, rain, and storm runoff. Condition: **WATER QUALITY-4.**

Drainage & Water Contamination

The storm water runoff associated with industrial activity at the existing Valero Refinery is controlled on-site. The developed areas are bermed and graded to direct storm water runoff to a drainage system that conveys the runoff to the wastewater treatment plant before discharge to the Carquinez Strait. The proposed project site will also be bermed, graded and paved, and storm water runoff from the site will also be directed to the existing on-site wastewater treatment plant. The drainage systems for the site have been designed for the storm water flow resulting from a precipitation event of 1.25"/hour and 4"/day, consistent with the design for the existing refinery storm water management system.

The storm water runoff that is collected from *outside* bermed or graded storm water collection areas (uncontaminated runoff) will be allowed to follow natural drainage patterns. The Valero Refinery is currently permitted for storm water treatment and discharge under an existing NPDES Permit, and the SWPPP will be revised and submitted for approval to the RWQCB to include the cogeneration project. (AFC p. 6.13-1, 5; SA Soil & Water, pp. 4.12-9, 10.)

MITIGATION:

- X The project owner will handle, treat, and discharge runoff in accordance with its existing Storm Water Pollution Prevention Plan and NPDES permit, revised to include the project. Conditions: **WATER QUALITY-2 & WATER QUALITY-3.**

Wastewater

The waste streams created by the cogeneration project are similar to existing refinery waste streams, which include boiler and cooling tower blowdown, that are currently being treated and discharged in compliance with water quality limits as specified under the existing NPDES Permit. Valero has consulted with the Regional Water Quality Control Board (RWQCB), and the RWQCB has concluded that no significant wastewater discharge impacts are expected (CRWQCB 2001a). Furthermore, the RWQCB has indicated that no change in the refinery's NPDES Permit is required. (AFC p. 6.13-1; SA Soil & Water, p. 4.12-8.)

MITIGATION:

- X The project owner will handle, treat, and wastewater in accordance with its existing NPDES permit, revised to include the project. Conditions: **WATER QUALITY-2.**

Cumulative Impacts

No other projects are proposed in the vicinity of the power plant and, thus, the project will not result in any cumulative environmental impacts from construction or operational activities.

Findings

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to water quality and all potential water quality impacts will be mitigated to insignificance.

CONDITIONS OF CERTIFICATION

EROSION & SEDIMENT CONTROL PLAN

WATER QUALITY-1: Prior to beginning any site mobilization activities at the project site, the project owner shall obtain approval from the CPM for an erosion and sediment control plan.

> **Verification:** The erosion control plan shall be submitted to the CPM for approval 30 days prior to the initiation of any site mobilization. The final plan shall contain all of the elements of the draft plan and the final design of the project along with changes made to address comments from staff or other agencies on the draft plan.

NPDES PERMIT

WATER QUALITY-2: The project owner shall comply with all provisions of the NPDES Permit. The project owner shall notify the Energy Commission CPM of any proposed

changes made to this permit and provide copies of materials related to permit amendment, modification and renewal. The project will not operate without this permit in place.

Verification: Within thirty days following receipt of a new, amended, or modified NPDES Permit from the RWQCB, the project owner shall submit a copy of the permit to the Energy Commission CPM. The project owner shall submit to the Energy Commission CPM in the annual compliance report a copy of the annual monitoring report submitted to the RWQCB. The project owner shall notify the Energy Commission CPM in writing of any changes made to this permit.

STORM WATER POLLUTION PREVENTION PLAN

WATER QUALITY-3: During project operation, the project owner will collect and convey storm water into the refinery's existing wastewater treatment plant, prior to discharge. Any stormwater leaving the site will be discharged in compliance with the refinery's existing NPDES Permit and Storm Water Pollution Prevention Plan (SWPPP). The SWPPP for refinery operations must be revised to include the cogeneration project operations, and approved by the RWQCB and the CPM prior to commercial operation and/or offsite discharge of storm water.

Verification: Thirty (30) days prior to the start of commercial operation and/or offsite storm water discharge, the project owner will submit to the CPM a copy of the revised Storm Water Pollution Prevention Plan (SWPPP) as submitted for approval to the RWQCB and prepared under the requirements of the existing refinery NPDES Permit. The project owner shall provide verification of RWQCB approval of the revised SWPPP prior to commercial operation.

CONTAMINATED SOIL & GROUNDWATER CONTROL

WATER QUALITY-4: Due to the potential for soil contamination at the site of the PROJECT, the soil shall be stockpiled and characterized at a rate of at least one four-point sample for every 6 inches of excavation. The characterization would focus on heavy metals and leachability testing for both off-site and on-site disposal options. In addition, color and odor of soils excavated are to be monitored, and if suspect soils are encountered, they are to be stockpiled separately for characterization. Any groundwater that may need dewatering during excavation shall be tested for contamination. A Site Investigation Workplan identifying how soil and groundwater will be tested for contaminants and the disposal methods will be provided to staff for review and approval.

Verification: Seven days prior to any earth moving activities, including those associated with site mobilization, ground disturbance, or grading as defined in the general conditions of certification, the project owner will provide a Site Investigation Workplan for approval. The plan must be approved prior to the commencement of site mobilization activities. The project owner will provide sampling results during excavation activities to the CPM on a weekly basis.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

WATER QUALITY & SOILS

APPLICABLE LAW	DESCRIPTION
FEDERAL	
Clean Water Act; 33 U.S.C. §1251 et seq.	Regulates discharges of wastewater and stormwater. Applies to wastewater discharged from cooling tower basins and stormwater runoff. These discharges are subject to NPDES permits obtained through the RWQCB at the state level.
STATE	
Porter Cologne Water Quality Control Act, Water Code §13000 et seq.	Established jurisdiction of nine RWQCBs to control pollutant discharges to surface and groundwater.
SWRCB Water Quality Order Nos. 91-13-DWQ and 92-08-DWQ	Regulates industrial stormwater discharges during construction and operation. These discharges subject to NPDES permits obtained through the RWQCB.
Safe Drinking Water and Toxic Enforcement Act (Prop. 65)	Prohibits the discharge of any substance known to cause cancer or birth defects to sources of drinking water.
LOCAL	
RWQCB	Responsible for controlling water quality.
City of Benicia, General Plan	Sets forth policies that address the protection of soil and farmlands.

This page intentionally blank.

WATER RESOURCES

	POWER PLANT SITE	CUMULATIVE IMPACTS	LORS COMPLIANCE
Water Supply Policy	MITIGATION	MITIGATION	YES
	For power plant cooling, the project will initially use 314 acre-feet annually of fresh inland water for cooling, provided by the City of Benicia in addition to water for the refinery. Project use (0.28 MGD) is 5.6 percent of refinery use (5 MGD). Benicia water supplies are from the State Water Project, water purchases from other cities, and water banking arrangements with other sources. Increased growth and drought curtailments affect the cost and reliability of water to the refinery and other water consumers. State water policy disfavors the use of inland fresh water for power plant cooling. **MITIGATION:** X Valero will meter annual project water use. Condition: **WATER RES-1**. X Within 30 months the project owner will implement a wastewater reuse and/or water use reduction program that will fully offset the amount of water used by the project, using either refinery wastewater or City of Benicia's treated wastewater. Condition: **WATER RES-2**. *References: AFC p. 6.13-3, 6; SA Soil & Water Resources, pp. 4.12-5, 11-18.*		

WATER RESOURCES – GENERAL

The project proposes to use 314 acre-feet annually of fresh inland water for cooling through use of evaporative (wet) cooling. An existing raw water service from the City of Benicia to the Valero refinery is proposed to supply both the project as well as the existing refinery, since it has sufficient capacity for both operations. Potable and service water for the project will be provided by the City of Benicia's domestic water supply. Total annual water use for the project will average 314 acre-feet/year (102 million gallons), with 37 percent of this water being makeup water for the new project cooling tower. Existing annual water use for the refinery operations averages 5,490 acre-feet/year (1.8 billion gallons), with 47 percent of this water being makeup water for the refinery's cooling tower.

The refinery has three existing boilers, which would be removed from service as a result of steam produced from the HRSG associated with the cogeneration project. After construction of the first phase, two of the boilers would be removed from service, and following construction of the second phase, the third boiler would be removed from service. The project would result in water use of approximately 60 gallons per minute (gpm) each (120 gpm total) for turbine injection, 70 gpm for cooling tower makeup, and no net change in boiler feedwater. The net increase in total average annual demand is 190 gpm, and an increased peak daily demand is 230 gpm.

Water Supply Policy

The City of Benicia's primary source of water is from the State Water Project (SWP) via the North Bay Aqueduct, consisting of a current normal allocation of 15,980 acre-feet/year. Like other SWP customers, City of Benicia's SWP allocation is subject to curtailment in dry years, which in 2001, consisted of curtailment to 35% of normal, or 5,593 acre-feet/year. In order to makeup deficiencies in supply during dry years, the City of Benicia has contracted with City of Vallejo for additional amounts of 1,100 and 4,400 acre-feet/year, which is available as current excess to Vallejo's SWP allocation.

City of Benicia has also developed a water banking agreement with the Mojave Water Agency (MWA), which serves to help buffer deficiencies in dry years for City of Benicia. During normal or wet years, Benicia may make available to MWA a portion of Benicia's SWP allocation for groundwater recharge. During dry years, City of Benicia may draw 50% of the water it has banked, or up to 8,000 acre-feet/year from MWA's SWP allocation after it has accumulated and banked 16,000 acre-feet in previous years. When Benicia chooses to draw on its banked water, MWA is capable of making-up the reduction in its SWP supply from groundwater withdrawal.

In addition to supply curtailments by the SWP due to dry water conditions, conveyance of SWP water through the North Bay Aqueduct, which includes supply for the Cities of Benicia, Fairfield and Vacaville, is hydraulically limited to a maximum flow of 142 cubic-feet/second (cfs). Seasonal curtailments of SWP water supply limiting North Bay Aqueduct flows to 65 cfs can occur during late spring (i.e. during most of May and June in 2001) for purposes of protecting Delta Smelt. The duration of this curtailment appears to become more extensive with the severity of the dry year.

Although the City of Benicia can currently make up deficits by purchasing water from other sources that may have surplus (like City of Vallejo), Benicia is concerned with its ability in the future to meet demands under its own projections for growth and development compounded by less availability of surplus water for purchase from others whose surplus supplies are also diminished by growth. The City of Benicia, along with the Cities of Fairfield and Vacaville, are seeking other means to sustain use of their fresh water supplies to meet future demands. This includes seeking an Appropriative Water Right from the SWRCB to establish priority for their SWP allocation based on Area of Origin to the Sacramento River. If successful, the Water Right would reduce their vulnerability to curtailments.

In conjunction with seeking to appropriate water through the SWRCB, the Cities of Benicia, Fairfield and Vacaville retained CH2MHill (a consultant company) to prepare an EIR in compliance with CEQA. Included in the EIR is an analysis of the City of Benicia's projected water demands and supply based on the City of Benicia's General Plan. Projected water demands at build-out are 17,120 AF. Projected supplies, including the new water appropriation, are predicted to be sufficient 41% of the time, capable of meeting most of the demand about 70% of the time, and experiencing shortfalls as significant as 4,720 AF about 5% of the time during critically dry years (CH2MHill 2001). During periods of deficiency to City of Benicia's supply, Valero's fresh water supply would be curtailed proportionately.

Due to the City of Benicia's potential for future deficiencies in its fresh water supply, Energy Commission staff analyzed water supply alternatives. Valero provided information pertaining to recycling of existing refinery wastewater for project use. Although it is technically feasible, Valero at first suggested that it was not economically practical considering that treatment plant improvements would cost approximately $5-6Million (M), and treated water conveyance would cost an additional $1-2M, for a total capital investment of $6-8M. In addition, the Applicant estimated increased O&M costs of at least $500,000 per year. Additionally, staff had requested the applicant to analyze use of recycled water from the City of Benicia's Wastewater Treatment Plant.

In recognition of the pre-existing Good Neighbor Agreement between the City and Valero, whereby Valero had committed to study the feasibility of utilizing recycled water within its overall refinery operations, the City has been interested in using the project as the catalyst to initiate use of the City's treated wastewater.

California Water Code section 13550 et seq., and SWRCB Resolution 75-58 identify the use of potable or fresh inland water for power plant cooling as unreasonable use and only to be used if other sources or other methods of cooling would be environmentally undesirable or economically unsound. In light of the projected deficits in fresh water supply, the City of Benicia believes that Valero would achieve a much higher degree of water supply reliability by utilizing recycled water to the extent possible. Any portion of Valero's industrial water demands capable of being supplied by recycled water would not be subject to drought-related curtailments in the future. In addition, the City of Benicia incurs costs for reserving supplementary freshwater supply from City of Vallejo, incurring a standby cost of about $220,000/year plus an additional cost for actual water purchased of up to $330,000/year, for a total of up to $550,000/year. If Valero reduces its freshwater use through the utilization of recycled water, the City of Benicia has stated a willingness to consider these types of avoided costs and savings in any negotiations with Valero, translating into potential cost-sharing in the development and supply of recycled water for use by Valero.

Valero indicated that an immediate, additional analysis of recycled water alternatives for the cogeneration project alone was problematic in terms of time and scope, and that such an analysis should be more for the refinery overall. Valero suggested alternative water use or reduction two years after project operation. In response to Valero and with Benicia's goals considered, Staff suggested that instead of performing further analysis of recycled water supply specific to the cogeneration project at this time, the project should be subject to a Condition of Certification requiring, within 3 years certification, use of recycled water to reduce the use of fresh water or water use reduction in its integrated cogeneration project and refinery operation in an amount equivalent to the water supply demands of the cogeneration project (estimated at 0.28 MGD). Valero has agreed to such a program. (AFC p. 6.13-3, 6; SA Soil & Water Resources, pp. 4.12-5, 11-18.)

Intervenor, Good Neighbor Steering Committee seeks to accelerate the alternative water/reduction program since public consumers may suffer additional curtailments given current general low water conditions. The Commission believes that the overall public interest supports conversion to the recycled water or consumption reduction program two years after certification.

MITIGATION:

- X Valero will meter annual project water use. Condition: **WATER RES-1**.
- X Within 30 months of certification, the project owner will implement a wastewater reuse and/or water use reduction program that will fully offset the amount of water used by the project, using either refinery wastewater or City of Benicia's treated wastewater. Condition: **WATER RES-2**.

Cumulative Impacts

Although the City of Benicia can currently make up deficits by purchasing water from other sources that may have surplus, Benicia is concerned with its ability in the future to meet demands under its own projections for growth and development compounded by less availability of surplus water for purchase from others whose surplus supplies are also diminished by growth. The City of Benicia, along with the Cities of Fairfield and Vacaville, are seeking other means to sustain use of their fresh water supplies to meet future demands. Foreseeable growth in water use, when considered with the project's water use, pose a potential cumulative impact that is mitigated by the Conditions of Certification.

Findings

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to water resources and all potential water resource impacts will be mitigated to insignificance.

CONDITIONS OF CERTIFICATION

WATER USE METERING

WATER RES-1: The project owner will install metering devices and record on a monthly basis the amount of fresh and recycled water used by the project. The annual summary will include the monthly range and monthly average of daily usage in gallons per day, and total water used by the project on a monthly and annual basis in acre-feet. For subsequent years, the annual summary will also include the yearly range and yearly average water use by the project. This information will be supplied to the CPM and the City of Benicia.

Verification: The project owner will submit a water use summary to both the CPM and the City of Benicia on an annual basis for the life of the project.

MAXIMIZE WASTEWATER REUSE

WATER RES-2: Within 30 months of certification, the project owner will implement a wastewater reuse program and/or water use reduction program that will fully offset the amount of water used by the project. The source of water for reuse may be either a refinery

wastewater stream or the City of Benicia's wastewater treatment plant secondary effluent. The amount of water reuse or reduction must be, at a minimum, the annual amount as documented in **WATER RES-1**. If the metering system should fail, the minimum water use offset will be equivalent to the average monthly project water use for the previous twelve months. The reduction or reuse plan is to be developed in consultation with the City of Benicia, consistent with the Good Neighbor Agreement, which encourages the project owner to achieve even broader reductions in its use of fresh water including use of recycled water. Recycled water use must comply with all Department of Health Services requirements as specified under Title 22 of the CCR and must receive proper environmental review, based on the actions being proposed.

Verification: On an annual basis, following certification and until the offset is implemented, the project owner shall provide the CPM and the City of Benicia a status report of its recycled water study/plan including status of its consultation with City of Benicia. The applicant shall provide a draft plan for water reuse or reduction to the CPM for review and approval no later than twenty-four months following certification. The project owner shall implement the water use offset no later than the three year anniversary of certification. The project owner shall install water metering devices, adequate to account for the water reduction or reuse and include reports to the CPM in accordance with **WATER RES-1**.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

WATER RESOURCES

APPLICABLE LAW	DESCRIPTION
FEDERAL	
STATE	
State Water Resources Control Board Policy 75 – 78; California Water Code, Sections 461 and 13552, and by Water Commission Resolution 77-1	SWRCB Resolution 75-58, discourages the use of fresh inland water for power plant cooling and prioritizes the source water of power plant cooling water: (1) wastewater discharge to the ocean, (2) ocean water, (3) brackish water from natural sources or irrigation return flow, (4) inland waste waters of low TDS, and, lastly, (5) other inland waters.
APPLICABLE LAW WATER RESOURCES	**DESCRIPTION**
LOCAL	
City of Benicia General Plan, Chap. 2.36 & 2.36.1	Establishes goals and policies related to adequate water supply.

This page intentionally blank.

ALTERNATIVES

Alternative Sites	THE PRE-EXISTING REFINERY SITE IS PREFERABLE TO ANY ALTERNATIVE
	No alternative site is preferable to the existing intra-refinery project site because it allows for the efficient transmission of steam for refinery processes and maximizes use of existing electric transmission and other infrastructure. The proposed site creates no impacts that cannot be mitigated to a level of insignificance and continues a pre-existing industrial use. *Reference: SA Alternatives, pp. 6-8, 9.*
Alternative Design	NO ALTERNATIVE DESIGN IS PREFERABLE
	Valero reviewed alternative air pollution control technologies, with an emphasis on compatibility with refinery fuel gas. Water injection was preferable on this basis to dry low NOx technology. Similarly, selective catalytic reduction (SCR) was preferable to any other available post-combustion NOx control. *Reference: AFC p. 5-1, 2.*
Alternative Technology	NO ALTERNATIVE TECHNOLOGY IS PREFERABLE & FEASIBLE
	Alternative technologies which produce steam include solar, geothermal, and biomass. Solar thermal technology requires a large amount of land, approximately 400 acres to produce the same amount of electricity. Geothermal resources, located in the Geysers, are too far away to efficiently transport steam to the refinery. Biomass facilities are typically smaller than the capacity of the project and typically produce greater emissions than the equivalent gas-fired combustion turbine technology. *Reference: SA Alternatives, pp. 6-7, 8.*
"No Project" Alternative	THE "NO PROJECT" ALTERNATIVE IS INFERIOR TO PROPOSED PROJECT
	The "no project" alternative causes the existing boilers to continue operation with greater emissions than the project. Additionally, the refinery would not gain the supply reliability from generating its own electricity. The refinery would continue to draw approximately 50 MW from the grid that would otherwise be available to supply peak demand to other users in California. The "no project" alternative would eliminate the expected economic benefits which the proposed project would bring to the local economy. *Reference: SA Alternatives, p. 6-9.*

ALTERNATIVES – GENERAL

The Energy Commission's Power Plant Siting Regulatory Program is a "certified regulatory program" under CEQA. With regard to the "Alternatives" analysis required in a certified siting proceeding, the CEQA Guidelines (Cal. Code Regs., tit. 14, §15252) state that the environmental documentation shall include either:

- Alternatives to the activity and mitigation measures to avoid or reduce any significant or potentially significant effects that the project might have on the environment, or
- A statement that the agency's review of the project showed that the project would not have any significant or potentially significant effects on the environment and therefore no alternatives or mitigation measures are proposed to avoid or reduce any significant effects on the environment. This statement shall be supported by a checklist or other

> documentation to show the possible effects that the agency examined in reaching this conclusion."

The Warren-Alquist Act specifies that an Application for Certification of a natural gas fired power plant "modification" (such as the VALERO project) is not required to provide any information *in its application* on alternative *sites* for the proposed facility. (Pub. Resources Code, §25540.6(a) and (b)). However, the Energy Commission's Siting Regulations (Cal. Code Regs., tit. 20, §1765) require that:

> "At the hearings . . . on an application exempt from the [Notice Of Intent] requirements pursuant to Public Resources Code section 25540.6, the parties shall present information on the feasibility of available site and facility alternatives to the applicant's proposal which substantially lessen the significant adverse impacts of the proposal on the environment.

The Energy Commission staff presented information in its Staff Assessment on the "feasibility of available site and facility alternatives to the applicant's proposal that substantially lessen the significant adverse impacts of the proposal on the environment" (Cal. Code Regs., tit. 20, §1765). Staff also analyzed whether there are any feasible alternative designs or alternative technologies, including the "no project alternative," that may be capable of reducing or avoiding any potential impacts of the proposed project while achieving its major objectives.

Alternative Sites

Consistent with the CEQA Guidelines, the consideration of alternative sites was guided by whether most project objectives could be accomplished at alternative sites and whether locating the project at an alternative site would substantially lessen any identified potential impacts of the project (Cal. Code Regs., tit. 14 §15126.6(a)).

The objectives of this project include provision of reliable supplies of both electricity and steam to the Valero Refinery. Since steam cannot be transported for long distances, the project must be located in close proximity to the refinery to meet this objective. The use of cogeneration project to provide steam for the refinery is intended to allow the shut down of existing steam boilers, which will reduce net emissions from the refinery. Location of the project too far from the refinery for steam distribution would require that the steam boilers remain in operation, resulting in a net increase in emissions from the refinery. For this reason, only locations in close proximity to the Valero Refinery have been considered.

The noise and visual resource impacts would be likely to increase by moving the project out from the middle of the refinery site and placing it in an area without refinery operations. Since an alternative site out of the refinery would reduce the ability of the project to meet its basic objectives and potentially increase some potential project impacts, the Commission did not find appropriate to conduct a more detailed evaluation of potential alternative sites in this industrial area.

Alternative sites within the main refinery complex have not been considered as part of this analysis, since the impacts associated with such sites are likely to be similar to those associated with the proposed site. Undeveloped Valero-owned land lies south and west of the refinery complex, but serves as a buffer zone between refinery operations and residential land uses in those directions. These areas would likely increase the impacts from the proposed project, and have also been eliminated from consideration.

Industrial land uses are present east of the refinery property. Locating the project in this area would increase the length of the fuel and steam pipelines and the transmission line needed for the project. The longer steam line would reduce the efficiency with which the project could provide steam to the refinery.

No other areas that are feasible for the proposed project are sufficiently close to the refinery site to meet the project's objectives.

Locating a similar project at an alternative location would not substantially reduce any of the potential impacts of the project. All of the potential significant impacts of this project have been mitigated to a level of insignificance by the Conditions of Certification of this Decision.

Based on these factors, the Commission concludes that an alternative site would not be preferable to the proposed site, and a more detailed alternative site analysis is not needed. (SA Alternatives, pp. 6-8, 9.)

Alternative Design

Air pollution control technology was considered with primary emphasis on processes with demonstrated successful performance. Although SCONOX for NOx control has been described as a promising technology, it has limited usage to date and apparently has not been used in a refinery fuel gas application. A conventional selective catalytic reduction (SCR) installation with ammonia injection is a proven technology, is currently successfully used in the refinery, and is supported by the existing aqueous ammonia storage and distribution system in the refinery. Water injection was also selected for turbine NOx minimization on the manufacturer's recommendation, since the characteristics of refinery fuel gas are not well suited to a dry low NOx system. Use of refinery fuel gas was selected to efficiently utilize the surplus fuel created by the shutdown of older boilers and to avoid the necessity of flaring the gas. (AFC p. 5-1, 2.)

Alternative Technology

Energy Commission staff compared various alternative technologies to the proposed project, scaled to meet the project's objectives. Since one of the key objectives of the project is to provide process steam to the Valero Refinery, only technologies utilizing thermal generation processes were considered. The proposed project is designed to replace existing steam boilers, which will result in a net reduction in air emissions from the Valero Refinery. The

technologies examined were those principal thermal electricity generation technologies that do not burn fossil fuels: solar thermal, geothermal and biomass.

Solar thermal generation technologies do not provide the continuous reliable power that is one of the key objectives for the project. Solar resources also require large land areas in order to generate electricity. Specifically, utility scale solar projects require between four and ten acres per megawatt depending on the type of system (parabolic trough, parabolic dish, or central receiver systems) (CEC 1996, pp. B.14.1, B.15.1-2). A solar project comparable to the proposed 102 megawatt project would require a minimum of 400 acres, or more than 200 times the amount of space taken by the proposed project. Since solar technology cannot provide continuous reliable power and requires a large land area, it does not provide a feasible alternative to the proposed project.

Geothermal resources are available in limited areas of California, including the Geysers area north of Benicia (CEC 2000). While development of additional geothermal resources in California is possible, geothermal power resources are not available in close enough proximity to the Valero Refinery to allow such a project to provide process steam. Because the provision of process steam is one of the key objectives of the project, geothermal power does not provide a feasible alternative to the project.

Biomass plants are typically under 10 MW, substantially smaller than the expected capacity of the proposed 102 MW project. Emissions from biomass projects are also typically greater than from gas-fired projects. For these reasons, biomass power does not provide a feasible alternative to the proposed project. (SA Alternatives, pp. 6-7, 8.)

“No Project” Alternative

CEQA Guidelines and Energy Commission regulations require consideration of the “no project” alternative. This alternative assumes that the project is not constructed, and compares that scenario to the proposed project. A determination is made whether the “no project” alternative is superior, equivalent, or inferior to the proposed project.

If the proposed project is not licensed, new air emissions from the project will be avoided but the existing steam boilers would remain in operation. This would result in a net increase in emissions from the Valero Refinery compared to allowing the proposed project to operate. The project will comply with all air quality requirements. In addition, the reliability of electrical supply at the refinery would be lower, and the refinery would continue to draw approximately 50 MW from the grid that would otherwise be available to supply peak demand to other users in the state.

The project also offers economic benefits. The “No Project” alternative would also eliminate the expected economic benefits, which the proposed project would bring to Solano County. These include minimum property tax revenues of approximately $1 million annually. Local construction supply and materials purchases are estimated to be $5 million, with another $10,000 in direct school impact fees. Plant operations are not expected to create any

additional permanent jobs at the Valero Refinery facility. The “No Project” alternative is not superior to the proposed project. (SA Alternatives, p. 6-9.)

Findings

The Commission has analyzed alternatives to the project design and related facilities, alternative technologies, and the “no project” alternative. Developing the project at an alternative site would not allow Valero to make use of the steam produced by the project or to utilize the infrastructure at the existing site, both objectives of the project. An alternative site would not substantially lessen the potential impacts of the project, which are mitigated to insignificance by the Conditions of Certification. The Commission does not believe that alternative technologies (geothermal, solar, and biomass) present feasible alternatives to the proposed project. The “no project” alternative will not meet need for reliable electricity at the refinery and would continue the use of the comparatively more polluting steam boilers. The "no project" alternative would also cause the loss of local economic benefits. Therefore, the “no project” alternative is inferior to the proposed project.

This page intentionally blank.

EFFICIENCY

Local/Regional Energy Supplies	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS** The project will operate with refinery fuel gas, with natural gas as a backup fuel. Since the refinery fuel gas is produced by the refining process, there is no adverse effect on energy supplies and resources. The use of natural gas as a backup fuel will not adversely affect energy supply as it in essence replaces the existing use of natural gas in other operations. The project will not adversely affect either local or regional energy supplies or resources. *References: AFC p. 7.3; SA Efficiency, pp. 5.3-1-4.*
Energy Consumption Rate	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS** The cogeneration project will employ state-of-the-art technology, with an overall fuel efficiency of approximately 42 percent. While it will consume substantial amounts of refinery fuel gas, 11 billion Btu per day, it will do so in the most efficient manner practicable. No energy standards apply to the efficiency of the project. *Reference: AFC p. 7.3; SA Efficiency, pp. 5.3-1-4.*

EFFICIENCY - GENERAL

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).

Valero is proposing to construct and operate a refinery fuel gas fired power plant within the Valero Refinery. The proposed facility is expected to produce approximately 100 MW of peak generation and 600-psig steam for refinery use. The design of the project includes two General Electric (GE) combustion gas turbines (CTGs – LM6000 PC SPRINT®) with chillers, and two heat recovery steam generators (HRSGs). Ancillary systems will provide for fuel gas compression, selective catalytic reduction (SCR) and associated instrumentation, piping, and wiring (AFC p. 2.0).

- The project will provide the refinery with the following benefits:

- The HRSGs will allow the shutdown of at least three existing package boilers at the refinery. Also, the HRSGs will be equipped with duct burners for additional steam production only when other refinery boiler production is limited.

- The electrical output from the first unit will, in essence, allow the refinery to operate "off line." This will benefit both the refinery and the electrical grid through effective management of resources based on cost and system need. This also provides for increased reliability to the refinery by having on site generation, thus eliminating or reducing the number of outages caused by disruption in the current electrical supply.

- When the second CTG is installed, the refinery will have approximately 50 MW of excess power to deliver to the electrical grid.

Local/Regional Energy Supplies

The project equipment will be designed to operate with refinery fuel gas with natural gas as a backup fuel. The refinery fuel gas is produced by the refining process and will vary considerably in composition. Since the refining produces the primary fuel, there is no adverse effect on energy supplies and resources.

The use of natural gas as a backup fuel will not adversely affect energy supply as it in essence replaces the existing use of natural gas in other operations. Valero indicates that natural gas supply will be available for the life of the project. There is no likelihood that the project will require the development of additional energy supply capacity. Therefore, project will not pose a substantial increase in demand for natural gas in California. (AFC p. 7.3.)

Energy Consumption Rate

Valero proposes to utilize two General Electric LM6000 Sprint® turbines. Modern gas turbines embody the most fuel-efficient electric generating technology available today. From published data this machine typically provides efficiency values between 40-42 percent. The present mode of operation at the refinery is to flare excess byproducts (e.g., refinery fuel gas) from the refinement process. The proposed project increases overall efficiency by utilizing the refinery fuel gas as a source for generation of electricity and steam.

Under normal fuel conditions, Valero will burn refinery fuel gas produced through the refinement process at a nominal rate of 410 MMBtu/hr LHV (LHV – lower heating value) for 8,760 hours per year (AFC Figure 7.4-2). The project does allow for combustion of natural gas as a backup fuel. Back up fuel of natural gas will be used at a nominal rate of 418 MMBtu/hr LHV. (SA Efficiency, p. 5.3-2, 3.)

No standards apply to the efficiency of the project since Valero has not proposed that the project be considered as a Qualifying Facility cogeneration project. However, Valero provided the necessary information and calculations to establish its eligibility as a qualifying facility. (AFC App. O; SA Supp., Efficiency, p. 54.)

Cumulative Impacts

Since Valero proposes to utilize an existing byproduct of the refining process for fuel, there are no cumulative impacts on fuel supply. The project as proposed increases the overall efficiency of operation and provides added benefits to the refinery and natural gas and electricity consumers. (SA Efficiency, p. 5.3-4.)

Finding

Without Conditions of Certification, the project conforms to applicable laws related to efficiency; and all potential adverse impacts regarding the efficient consumption of energy will be mitigated to insignificance by other Conditions of Certification of this Decision.

CONDITIONS OF CERTIFICATION

None.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

EFFICIENCY

APPLICABLE LAW	DESCRIPTION
STATE	
Title 14, California Code of Regulations, § 15126.4(a)(1)	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).

This page intentionally blank.

FACILITY DESIGN

Engineering - General	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS** To protect public health and safety as well as the viability of the project, the applicable power plant equipment, pipelines, and other non-transmission line structures shall be designed and constructed in accordance with the 1998 California Building Code, or its successor. The Chief Building Officials of the City of shall review and approve the relevant design criteria and plans submitted by Valero and conduct all necessary inspections. **CONDITIONS:** X Valero shall construct the project using the most recent California Building Code with the oversight and approval of the local Chief Building Official; shall assign California registered engineers to the project; and shall pay necessary in-lieu permit fees. Conditions: **GEN-1** through **GEN-8**. *Reference: AFC App. N; SA Fac. Design, pp. 5.1-2-6.*
Engineering Geology	**COMLIES WITH APPLICABLE LAWS & REGULATIONS** To fully describe the geologic conditions of the power plant site, Valero shall prepare an Engineering Geology Report pursuant tot he California Building Code. During site grading, a designated Engineering Geologist shall monitor for any adverse soil or geologic conditions. **GEO-1** through **GEO-3.** **CONDITIONS:** X Valero shall prepare an Engineering Geology Report pursuant to the California Building Code to fully describe the geologic conditions of the power plant site and pipeline route. Conditions: **GEO-1** & **GEO-2**. X Valero shall conduct a detailed expansive soils analysis of the project site and linear facilities prior to the completion of the final design for the project. Condition: **GEO-3.** *Reference: AFC App. N-1 & K; SA Fac. Design, pp. 5.1-2-6.*

Civil Engineering	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS** To ensure erosion and sedimentation control, among other things, Valero shall submit a site grading and drainage plan. (See also **WATER QUALITY-1**) To ensure proper conditions for foundations and other features, any adverse soil or geologic conditions shall be reported and corrected during site grading. **CONDITIONS:** X Valero shall submit grading plans and erosion/sedimentation control plans, perform inspections and submit as-built plans for approval. Conditions: **CIVIL-1, CIVIL-3** & **CIVIL-4**. X If appropriate, the resident engineer shall stop construction if unknown, adverse geologic conditions are encountered. Condition: **CIVIL-2.** *Reference: AFC App. N & K; SA Fac. Design, pp. 5.1-2-6.*
Structural Engineering	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS** Major structures and equipment are those necessary for power production, costly or time-consuming to repair, or those used for the storage of hazardous materials. The AFC lists the design criteria essential to ensuring that the project is designed in a manner that protects the environment and public health and safety. **CONDITIONS:** X For earthquake safety of major structures, foundations, supports, anchorages, and tanks, Valero will submit appropriate lateral force calculations, designs and plans to the Chief Building Official for approval. In addition, to ensure the safety of storage tanks, some of which contain hazardous materials, Valero will submit plans and specifications to the Chief Building Official for approval. Conditions: **STRUC-1** through **STRUC-4**. *Reference: AFC Supp. App. N-5; SA Fac. Design, pp. 5.1-2-6.*
Mechanical Engineering	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS** The mechanical systems include not only the power train with its major components but also water and wastewater treatment facilities, pressure vessels, piping systems and pumps, storage tanks, air compressors, fire protection systems, heating and ventilation, and water and sewage. The AFC lists and describes the mechanical codes and design criteria applicable to these systems. **CONDITIONS:** X To ensure the safety of piping and pressure vessels, some of which transport or store hazardous materials, Valero will submit plans and specifications to the Chief Building Official for approval. Heating and air conditioning equipment, as well as plumbing, will be reviewed and inspected by the Chief Building Official. Conditions: **MECH-1** through **MECH-4**. *Reference: AFC Appendix D, D-13 - 18; SA Fac. Design, pp. 5.1-2-6.*

Electrical Engineering	COMPLIES WITH APPLICABLE LAWS & REGULATIONS
	Major electrical features of the project, other than transmission, include generators, power control wiring, protective relays, grounding systems, and site lighting. The AFC lists and describes the electrical codes and design criteria applicable to these systems. **CONDITIONS:** For electric systems or components of 480 volts or higher, Valero shall submit plans to the Chief Building Official for approval. Conditions: **ELEC-1** & **ELEC-2.** *Reference: AFC Appendix D, D-20 – 23; SA Fac. Design, pp. 5.1-2-6.*

FACILITY DESIGN – GENERAL

The Warren Alquist Act requires the commission to "prepare a written decision….which includes:

(a) Specific provisions relating to the manner in which the proposed facility is to be designed, sited, and operated in order to protect environmental quality and assure public health and safety, [and]

(d)(1) Findings regarding the conformity of the proposed site and related facilities…with public safety standards…and with other relevant local, regional, state and federal standards, ordinances, or laws…" (Pub. Resources Code, § 25523).

Facility Design encompasses the civil, structural, mechanical and electrical engineering aspects of the project. The Facility Design analysis verifies that the project has been described in sufficient detail to provide reasonable assurance that it can be designed and constructed in accordance with all applicable laws and regulations, and in a manner that protects environmental quality and assures public health and safety.

This analysis also examines whether special design features should be considered during final design to deal with conditions unique to the site which could influence public health and safety, environmental protection or the operational reliability of the project. This analysis further identifies the design review and construction inspection process and establishes conditions of certification that will be used to ensure compliance with applicable laws and regulations and any special design requirements.

Engineering - General

Under Section 104.2 of the California Building Code (CBC), the building official is authorized and directed to enforce all the provisions of the CBC. For all energy facilities certified by the Energy Commission, the Energy Commission is the building official and has the responsibility to enforce the code. In addition, the Energy Commission has the power to render

interpretations of the CBC and to adopt and enforce rules and supplemental regulations to clarify the application of the CBC's provisions.

The Energy Commission's design review and construction inspection process is developed to conform to CBC requirements and ensure that all facility design conditions of certification are met. As provided by Section 104.2.2 of the CBC, the Energy Commission appoints experts to carry out the design review and construction inspections and act as delegate CBO on behalf of the Energy Commission. These delegate agents typically include the local building official and independent consultants hired to cover technical expertise not provided by the local official. The project owner, through permit fees as provided by CBC Sections 107.2 and 107.3, pays the costs of the reviews and inspections. While building permits in addition to the Energy Commission certification are not required for this project, the project owner pays in-lieu permit fees, consistent with CBC Section 107, to cover the costs of reviews and inspections.

The Energy Commission has developed conditions of certification to ensure compliance with applicable laws and regulations and protection of the environment and public health and safety. Some of these conditions address the roles, responsibilities and qualifications of Valero's engineers responsible for the design and construction of the project. Engineers responsible for the design of the civil, structural, mechanical, and electrical portions of the project are required to be registered in California, and to sign and stamp each submittal of design plans, calculations, and specifications submitted to the CBO. These conditions require that no element of construction proceed without prior approval from the CBO. They also require that qualified special inspectors be assigned to perform or oversee special inspections required by the applicable LORS.

While the Energy Commission and delegate CBO have the authority to allow some flexibility with construction activities, these conditions are written to require that no element of construction of permanent facilities, which is difficult to reverse, may proceed without prior approval of plans from the CBO. For those elements of construction that are not difficult to reverse and are allowed to proceed without approval of the plans, the applicant shall have the responsibility to fully modify those elements of construction to comply with all design changes that result from the CBO's plan review and approval process.

CONDITIONS:

- X Valero shall construct the project using the most recent California Building Code with the oversight and approval of the local Chief Building Official; shall assign California registered engineers to the project; and shall pay necessary in-lieu permit fees. Conditions: **GEN-1** through **GEN-8.**

Engineering Geology

As described in GEOLOGY, seismic zone 4 conditions at the project site require the preparation of an Engineering Geology Report to characterize the geologic conditions. Additionally, there is a potential for expansive soils at the site, requiring special design considerations.

CONDITIONS:

- X Valero shall prepare an Engineering Geology Report pursuant to the California Building Code to fully describe the geologic conditions of the power plant site and pipeline route. Conditions: **GEO-1** & **GEO-2**.
- X Valero shall conduct a detailed expansive soil analysis of the project site prior to the completion of the final design for the project. Condition: **GEO-3.**

Civil Engineering

Valero proposes that small, lightly loaded structures not subject to vibratory loading shall be supported on shallow footings or mat foundations on properly compacted fill or undisturbed native soils. Foundation depth should extend to at least 18 inches below lowest adjacent grade. If any portion of the foundation bears on bedrock, the entire foundation should be deepened to bear on bedrock. Large, heavily loaded structures, and structures subjected to vibratory loading, should be constructed on deepened foundations that bear on bedrock. Such foundations may include deepened footing or concrete reinforced pier and grade beams. The power plant and related facilities shall be designed to meet the seismic requirements of the latest edition of the California Building Code. (AFC Appendix K.)

CONDITIONS:

- X Valero shall submit grading plans and erosion/sedimentation control plans, perform inspections and submit as-built plans for approval. Conditions: **CIVIL-1, CIVIL-3** & **CIVIL-4**.
- X If appropriate, the resident engineer shall stop construction if unknown, adverse geologic conditions are encountered. Condition: **CIVIL-2.**

Structural Engineering

Major structures, systems and equipment are defined as those necessary for power production and are costly to repair or replace, or that require a long lead time to repair or replace, or those used for the storage, containment, or handling of hazardous or toxic materials. The AFC, Appendix N and AFC Supplement, Appendix N-5 list the civil, structural, mechanical and electrical design criteria and demonstrates the likelihood of compliance with applicable LORS, all of which is essential to ensuring that the project is designed in a manner that protects the environment and public health and safety.

The project will be designed and constructed to the 1998 edition of the CBC, and other applicable codes and standards in effect at the time design and construction of the project actually commence. In the event the design of project is submitted to the Chief Building Official (CBO) for review and approval when the successor to the 1998 CBC is in effect, the 1998 CBC provisions, identified herein, shall be replaced with the applicable successor provisions.

The procedures and limitations for the seismic design of structures by the 1998 CBC are determined considering seismic zoning, site characteristics, occupancy, structural configuration, structural system and height. Different design and analysis procedures are recognized in the 1998 CBC for determining seismic effects on structures. The dynamic lateral force procedure of Section 1631 is always acceptable for design. The static lateral force procedure of Section 1630 is allowed under certain conditions of regularity, occupancy and height as determined under Section 1629. Non-building structures (such as cooling towers, tanks and heat recovery steam generators) are included in Section 1634. Most of the structures in power plant projects are considered non-building structures. (AFC Appendix N.)

CONDITIONS:

X For earthquake safety of major structures, foundations, supports, anchorages, and tanks, the Project Owner will submit appropriate lateral force calculations, designs and plans to the Chief Building Official for approval. In addition, to ensure the safety of storage tanks, some of which contain hazardous materials, the Project Owner will submit plans and specifications to the Chief Building Official for approval. Conditions: **STRUC-1** through **STRUC-4**.

Mechanical Engineering

The AFC, Appendix N-2 lists and describes the mechanical codes, standards and design criteria that will be employed in project design documents, procurement specifications and contracts. Design work will be performed in accordance with the appropriate LORS. This approach will assure the project's mechanical systems are designed to the appropriate codes and standards. (AFC Appendix N-2.) Condition: **MECH-1** through **MECH-4.**

CONDITIONS:

X To ensure the safety of piping and pressure vessels, some of which transport or store hazardous materials, Valero will submit plans and specifications to the Chief Building Official for approval. Heating and air conditioning equipment, as well as plumbing, will be reviewed and inspected by the Chief Building Official. Conditions: **MECH-1** through **MECH-4**.

Electrical Engineering

Major electrical features of the project, other than transmission, include generators, power control wiring, protective relaying, grounding system, cathodic protection system and site lighting. The AFC, Appendix D lists and describes the electrical codes, standards and design criteria that will be employed in project design documents, procurement specifications and contracts (AFC Appendix N-3.)

CONDITIONS:

X For electric systems or components of 480 volts or higher, Valero shall submit plans to the Chief Building Official for approval. Conditions: **ELEC-1** & **ELEC-2**.

Finding

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to facility design and related engineering fields.

CONDITIONS OF CERTIFICATION

CALIFORNIA BUILDING CODE

GEN-1: The project owner shall design, construct and inspect the project in accordance with the 1998 California Building Code (CBC) and all other applicable LORS in effect at the time initial design plans are submitted to the CBO for review and approval. The CBC in effect is that edition that has been adopted by the California Building Standards Commission and published at least 180 days previously. All transmission facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification in **TRANSMISSION SYSTEM ENGINEERING**.

> Protocol: In the event that the project is submitted to the CBO when a successor to the 1998 CBC is in effect, the 1998 CBC provisions identified herein shall be replaced with the applicable successor provisions. *Where, in any specific case, different sections of the code specify different materials, methods of construction, or other requirements, the most restrictive shall govern.* Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

Verification: Within 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) after receipt of the Certificate of Occupancy, the project owner shall submit to the California Energy Commission Compliance Project Manager (CPM) a statement of verification, signed by the responsible design engineer, attesting that all designs, construction, installation and inspection requirements of the applicable LORS and the Energy Commission's Decision have been met in the area of facility design. The project owner shall provide the CPM copy of the Certificate of Occupancy within 30 days of receipt from the CBO [1998 CBC, Section 109 – Certificate of Occupancy.]

DESIGN SCHEDULE

GEN-2: The project owner shall furnish to the CPM and to the CBO a schedule of facility design submittals, a Master Drawing List, and a Master Specifications List. The schedule shall contain a description of, and a list of proposed submittal packages for design, calculations, and specifications for major structures and equipment, including transmission facilities. To facilitate audits by Energy Commission staff, the project owner shall provide designated packages to the CPM when requested.

Verification: At least 60 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of rough grading, the project owner shall submit the schedule, a Master Drawing List, and a Master Specifications List to the CBO and to the CPM. The project owner shall provide schedule updates in the Monthly Compliance Report.

IN-LIEU PERMIT FEES

GEN-3: The project owner shall make payments to the CBO for design review, plan check and construction inspection, equivalent to the fees listed in the 1998 CBC, Chapter 1, Section 107 and Table 1-A, Building Permit Fees; Appendix Chapter 33, Section 3310 and Table A-33-A, Grading Plan Review Fees; and Table A-33-B, Grading Permit Fees. If CBO has adjusted the CBC fees for design review, plan check and construction inspection, the project owner shall pay the adjusted fees.

Verification: The project owner shall make the required payments to the CBO at the time of submittal of the plans, design calculations, specifications, or soil reports. The project owner shall send a copy of the CBO's receipt of payment to the CPM in the next Monthly Compliance Report indicating that the applicable fees have been paid.

ASSIGNED CALIFORNIA RESIDENT ENGINEER

GEN-4: Prior to the start of rough grading, the project owner shall assign a California registered architect, structural engineer or civil engineer, as a resident engineer (RE), to be in general responsible charge of the project [Building Standards Administrative Code (Cal. Code Regs., tit. 24, § 4-209, Designation of Responsibilities)]. The RE may delegate responsibility for portions of the project to other registered engineers. Registered mechanical and electrical engineers may be delegated responsibility for mechanical and electrical portions of the project respectively. A project may be divided into parts, provided each part is clearly defined as a distinct unit. Separate assignment of general responsible charge may be made for each designated part.

The RE shall:

- Monitor construction progress to ensure compliance with LORS;
- Ensure that construction of all the facilities conforms in every material respect to the applicable LORS, these Conditions of Certification, approved plans, and specifications;
- Prepare documents to initiate changes in the approved drawings and specifications when directed by the project owner or as required by conditions on the project;.
- Be responsible for providing the project inspectors and testing agency(ies) with complete and up-to-date set(s) of stamped drawings, plans, specifications and any other required documents;
- Be responsible for the timely submittal of construction progress reports to the CBO from the project inspectors, the contractor, and other engineers who have been delegated responsibility for portions of the project; and

- Be responsible for notifying the CBO of corrective action or the disposition of items noted on laboratory reports or other tests as not conforming to the approved plans and specifications.

The RE shall have the authority to halt construction and to require changes or remedial work, if the work does not conform to applicable requirements. If the RE or the delegated engineers are reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the name, qualifications and registration number of the RE and any other delegated engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the RE and other delegated engineer(s) within five days of the approval. If the RE or the delegated engineer(s) are subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

OTHER PROJECT ENGINEERS

GEN-5: Prior to the start of rough grading, the project owner shall assign at least one of each of the following California registered engineers to the project: A) a civil engineer; B) a geotechnical engineer or a civil engineer experienced and knowledgeable in the practice of soils engineering; C) a design engineer, who is either a structural engineer or a civil engineer fully competent and proficient in the design of powerplant structures and equipment supports; D) a mechanical engineer; and E) an electrical engineer. [California Business and Professions Code section 6704 et seq., and sections 6730 and 6736 requires state registration to practice as a civil engineer or structural engineer in California.]

The tasks performed by the civil, mechanical, electrical or design engineers may be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project (e.g., proposed earthwork, civil structures, powerplant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer. The civil, geotechnical or civil and design engineer assigned in conformance with Facility Design condition **GEN-5**, may be responsible for design and review of the TSE facilities. The project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all engineers assigned to the project. [1998 CBC, Section 104.2, Powers and Duties of Building Official.]

If any one of the designated engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

A: The civil engineer shall:

- Design, or be responsible for design, stamp, and sign all plans, calculations, and specifications for proposed site work, civil works, and related facilities. At a minimum, these include: grading, site preparation, excavation, compaction, construction of secondary containment, foundations, erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads, and sanitary sewer systems; and
- Provide consultation to the RE during the construction phase of the project, and recommend changes in the design of the civil works facilities and changes in the construction procedures.

B: The geotechnical engineer or civil engineer, experienced and knowledgeable in the practice of soils engineering, shall:

- Review all the engineering geology reports, and prepare final soils grading report;
- Prepare the soils engineering reports required by the 1998 CBC, Appendix Chapter 33, Section 3309.5 – Soils Engineering Report, and Section 3309.6 – Engineering Geology Report;
- Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in the 1998 CBC, Appendix Chapter 33, section 3317, Grading Inspections;
- Recommend field changes to the civil engineer and RE;
- Review the geotechnical report, field exploration report, laboratory tests, and engineering analyses detailing the nature and extent of the site soils that may be susceptible to liquefaction, rapid settlement or collapse when saturated under load; and,
- Prepare reports on foundation investigation to comply with the 1998 CBC, Chapter 18 section 1804, Foundation Investigations.
- This engineer shall be authorized to halt earthwork and to require changes; if site conditions are unsafe or do not conform with predicted conditions used as a basis for design of earthwork or foundations. [1998 CBC, section 104.2.4, Stop orders.]

C: The design engineer shall:

- Be directly responsible for the design of the proposed structures and equipment supports;
- Provide consultation to the RE during design and construction of the project;
- Monitor construction progress to ensure compliance with LORS;
- Evaluate and recommend necessary changes in design; and
- Prepare and sign all major building plans, specifications and calculations.

D: The mechanical engineer shall be responsible for, and sign and stamp a statement with, each mechanical submittal to the CBO, stating that the proposed final design

plans, specifications, and calculations conform with all of the mechanical engineering design requirements set forth in the Energy Commission's Decision.

E: The electrical engineer shall:

- Be responsible for the electrical design of the project; including switchyard, outlet and termination facilities, and
- Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all the responsible engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the engineers within five days of the approval. If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

ASSIGNED INSPECTOR

GEN-6: Prior to the start of an activity requiring special inspection, the project owner shall assign to the project, qualified and certified special inspector(s) who shall be responsible for the special inspections required by the 1998 CBC, Chapter 17, Section 1701, Special Inspections, Section, 1701.5 Type of Work (requiring special inspection), and Section 106.3.5, Inspection and observation program.

The special inspector shall:

- Be a qualified person who shall demonstrate competence, to the satisfaction of the CBO, for inspection of the particular type of construction requiring special or continuous inspection;
- Observe the work assigned for conformance with the approved design drawings and specifications;
- Furnish inspection reports to the CBO and RE. All discrepancies shall be brought to the immediate attention of the RE for correction, then, if uncorrected, to the CBO and the CPM for corrective action; and
- Submit a final signed report to the RE, CBO, and CPM, stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans and specifications and the applicable provisions of the applicable edition of the CBC.
- A certified weld inspector, certified by the American Welding Society (AWS), and/or American Society of Mechanical Engineers (ASME) as applicable, shall inspect welding performed on-site requiring special inspection (including structural, piping, tanks and pressure vessels).

Verification: At least 15 days prior to the start of an activity requiring special inspection, the project owner shall submit to the CBO for review and approval, with a copy to the CPM, the name(s) and qualifications of the certified weld inspector(s), or other certified special inspector(s) assigned to the project to perform one or more of the duties set forth above. The project owner shall also submit to the CPM a copy of the CBO's approval of the qualifications of all special inspectors in the next Monthly Compliance Report.

If the special inspector is subsequently reassigned or replaced, the project owner has five days in which to submit the name and qualifications of the newly assigned special inspector to the CBO for approval. The project owner shall notify the CPM of the CBO's approval of the newly assigned inspector within five days of the approval.

STATUS REPORT

GEN-7: The project owner shall keep the CBO informed regarding the status of engineering and construction. If any discrepancy in design and/or construction is discovered, the project owner shall document the discrepancy and recommend the corrective action required. The discrepancy documentation shall be submitted to the CBO for review and approval. The discrepancy documentation shall reference this condition of certification and, if appropriate, the applicable sections of the CBC and/or other LORS.

Verification: The project owner shall submit monthly construction progress reports to the CBO and CPM. The project owner shall transmit a copy of the CBO's approval or disapproval of any corrective action taken to resolve a discrepancy to the CPM within 15 days. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action to obtain CBO's approval.

AS-BUILT APPROVAL

GEN-8: The project owner shall obtain the CBO's final approval of all completed work. The project owner shall request the CBO to inspect the completed structure and review the submitted documents. When the work and the "as-built" and "as graded" plans conform to the approved final plans, the project owner shall notify the CPM regarding the CBO's final approval. The marked up "as-built" drawings for the construction of structural and architectural work shall be submitted to the CBO. Changes approved by the CBO shall be identified on the "as-built" drawings [1998 CBC, Section 108, Inspections.]

Verification: Within 15 days of the completion of any work, the project owner shall submit to the CBO, with a copy to the CPM, (a) a written notice that the completed work is ready for final inspection, and (b) a signed statement that the work conforms to the final approved plans.

DESIGNATED ENGINEERING GEOLOGIST

GEO-1: Prior to the start of construction, the project owner shall assign to the project an engineering geologist(s), certified by the State of California, to carry out the duties required

by the CBC Appendix Chapter 33, Section 3309.4. The certified engineering geologist(s) assigned must be approved by the CPM. The functions of the engineering geologist can be performed by the responsible geotechnical engineer, if that person has the appropriate California license.

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CPM) prior to the start of construction, the project owner shall submit to the CPM for approval the name(s) and license number(s) of the certified engineering geologist(s) assigned to the project. The submittal should include a statement that CPM approval is needed. The CPM will approve or disapprove of the engineering geologist(s) and will notify the project owner of its findings within 15 days of receipt of the submittal. If the engineering geologist(s) is subsequently replaced, the project owner shall submit for approval the name(s) and license number(s) of the newly assigned individual(s) to the CPM. The CPM will approve or disapprove of the engineering geologist(s) and will notify the project owner of the findings within 15 days of receipt of the notice of personnel change.

ENGINEERING GEOLOGIST DUTIES

GEO-2: The assigned engineering geologist(s) shall carry out the duties required by the 1998 CBC, Appendix Chapter 33, Section 3309.4 Engineered Grading Requirement, and Section 3318.1 – Final Reports. Those duties are:

1. Prepare the Engineering Geology Report. This report shall accompany the Plans and Specifications when applying to the CBO for the grading permit.
2. Monitor geologic conditions during construction. In particular, examine cut slopes for adverse dipping of bedding planes.
3. Prepare the Final Engineering Geology Report.

Protocol: The Engineering Geology Report required by the 1998 CBC Appendix Chapter 33, Section 3309.3 Grading Designation, shall include an adequate description of the geology of the site, conclusions and recommendations regarding the effect of geologic conditions on the proposed development, and an opinion on the adequacy of the site for the intended use as affected by geologic factors.

The Final Engineering Geology Report to be completed after completion of grading, as required by the 1998 CBC Appendix Chapter 33, Section 3318.1, shall contain the following: A final description of the geology of the site and any new information disclosed during grading and the effect of same on recommendations incorporated in the approved grading plan. The engineering geologist shall submit a statement that, to the best of his or her knowledge, the work within their area of responsibility is in accordance with the approved Engineering Geology Report and applicable provisions of this chapter.

Verification: (1) Within 15 days after submittal of the application(s) for grading permit(s) to the CBO, the project owner shall submit a signed statement to the CPM

stating that the Engineering Geology Report has been submitted to the CBO as a supplement to the plans and specifications and that the recommendations contained in the report are incorporated into the plans and specifications. (2) Within 90 days following completion of final grading, the project owner shall submit copies of the Final Engineering Geology Report required by the 1998 CBC Appendix Chapter 33, Section 3318, Completion of Work, to the CBO, and to the CPM on request.

EXPANSIVE SOIL MITIGATION

GEO-3: Chapter 18 of the CBC requires all structures to be designed to resist the effects of expansive soils. Since expansive soils are present at this site, mitigation of such soils will be necessary.

Prior to the start of construction, the project owner shall submit to the CPM an updated geotechnical report, which includes all laboratory test data and engineering calculations in support of recommended mitigation procedures for expansive soils at this site.

GRADING PLAN - EROSION CONTROL PLAN

CIVIL-1: Prior to the start of site grading, the project owner shall submit to the CBO for review and approval the following:

- Design of the proposed drainage structures and the grading plan;
- An erosion and sedimentation control plan;
- Related calculations and specifications, signed and stamped by the responsible civil engineer; and
- Soils report as required by the 1998 CBC, Appendix Chapter 33, Section 3309.5, Soils Engineering Report and Section 3309.6, Engineering Geology Report.

Verification: At least 15 days prior to the start of site grading, the project owner shall submit the documents described above to the CBO for review and approval. In the next Monthly Compliance Report following the CBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the CBO.

UNFORESEEN GEOLOGIC CONDITION

CIVIL-2: The resident engineer shall, if appropriate, stop all earthwork and construction in the affected areas when the responsible geotechnical engineer or civil engineer experienced and knowledgeable in the practice of soils engineering identifies unforeseen adverse soil or geologic conditions. The project owner shall submit modified plans, specifications and calculations to the CBO based on these new conditions. The project owner shall obtain approval from the CBO before resuming earthwork and construction in the affected area. [1998 CBC, Section 104.2.4, Stop orders.]

Verification: The project owner shall notify the CPM, within five days, when earthwork and construction is stopped as a result of unforeseen adverse geologic/soil conditions.

Within five days of the CBO's approval, the project owner shall provide to the CPM a copy of the CBO's approval to resume earthwork and construction in the affected areas.

GRADING INSPECTION

CIVIL-3: The project owner shall perform inspections in accordance with the 1998 CBC, Chapter 1, Section 108, Inspections; Chapter 17, Section 1701.6, Continuous and Periodic Special Inspection; and Appendix Chapter 33, Section 3317, Grading Inspection. All plant site-grading operations shall be subject to inspection by the CBO and the CPM. If, in the course of inspection, it is discovered that the work is not being done in accordance with the approved plans, the discrepancies shall be reported immediately to the resident engineer, the CBO, and the CPM. The project owner shall prepare a written report detailing all discrepancies and non-compliance items, and the proposed corrective action, and send copies to the CBO and the CPM.

Verification: Within five days of the discovery of any discrepancies, the resident engineer shall transmit to the CBO and the CPM a Non-Conformance Report (NCR), and the proposed corrective action. Within five days of resolution of the NCR, the project owner shall submit the details of the corrective action to the CBO and the CPM. A list of NCRs, for the reporting month, shall also be included in the following Monthly Compliance Report.

AS-BUILT GRADING PLAN & EROISION CONTROL PLAN APPROVAL

CIVIL-4: After completion of finished grading and erosion and sedimentation control and drainage facilities, the project owner shall obtain the CBO's approval of the final "as-graded" grading plans, and final "as-built" plans for the erosion and sedimentation control facilities [1998 CBC, Section 109, Certificate of Occupancy.]

Verification: Within 30 days of the completion of the erosion and sediment control mitigation and drainage facilities, the project owner shall submit to the CBO the responsible civil engineer's signed statement that the installation of the facilities and all erosion control measures were completed in accordance with the final approved combined grading plans, and that the facilities are adequate for their intended purposes. The project owner shall submit a copy of this report to the CPM in the next Monthly Compliance Report.

LATERAL FORCE PROCEDURE APPROVAL

STRUC-1: Prior to the start of any increment of construction, the project owner shall submit to the CBO for review and approval the proposed lateral force procedures for project structures and the applicable designs, plans and drawings for project structures. Proposed lateral force procedures, designs, plans and drawings shall be those for:

- Major project structures;
- Major foundations, equipment supports and anchorage;
- Large field fabricated tanks; and

- Turbine/generator pedestal.

In addition, the project owner shall, prior to the start of any increment of construction, get approval from the CBO of the lateral force procedures proposed for project structures to comply with the lateral force provisions of the CBC. The project owner shall:

- Obtain approval from the CBO of lateral force procedures proposed for project structures;
- Obtain approval from the CBO for the final design plans, specifications, calculations, soils reports, and applicable quality control procedures. If there are conflicting requirements, the more stringent shall govern (i.e., highest loads, or lowest allowable stresses shall govern). All plans, calculations, and specifications for foundations that support structures shall be filed concurrently with the structure plans, calculations, and specifications [1998 CBC, Section 108.4, Approval Required];
- Submit to the CBO the required number of copies of the structural plans, specifications, calculations, and other required documents of the designated major structures at least 90 days (or a lesser number of days mutually agreed to by the project owner and the CBO), prior to the start of on-site fabrication and installation of each structure, equipment support, or foundation [1998 CBC, Section 106.4.2, Retention of plans and Section 106.3.2, Submittal documents.]; and
- Ensure that the final plans, calculations, and specifications clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. The final designs, plans, calculations and specifications shall be signed and stamped by the responsible design engineer [1998 CBC, Section 106.3.4, Architect or Engineer of Record.]

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of any increment of construction, the project owner shall submit to the CBO, with a copy to the CPM, the responsible design engineer's signed statement that the final design plans, specifications and calculations conform with all of the requirements set forth in the Energy Commission's Decision.

If the CBO discovers non-conformance with the stated requirements, the project owner shall resubmit the corrected plans to the CBO within 20 days of receipt of the nonconforming submittal with a copy of the transmittal letter to the CPM. The project owner shall submit to the CPM a copy of a statement from the CBO that the proposed structural plans, specifications, and calculations have been approved and are in conformance with the requirements set forth in the applicable LORS.

SPECIAL INSPECTION REPORTS

STRUC-2: The project owner shall submit to the CBO the required number of sets of the following:

- Concrete cylinder strength test reports (including date of testing, date sample taken, design concrete strength, tested cylinder strength, age of test, type and size of

sample, location and quantity of concrete placement from which sample was taken, and mix design designation and parameters);

- Concrete pour sign-off sheets;
- Bolt torque inspection reports (including location of test, date, bolt size, and recorded torques);
- Field weld inspection reports (including type of weld, location of weld, inspection of non-destructive testing (NDT) procedure and results, welder qualifications, certifications, qualified procedure description or number (ref: AWS); and
- Reports covering other structure activities requiring special inspections shall be in accordance with the 1998 CBC, Chapter 17, Section 1701, Special Inspections, Section 1701.5, Type of Work (requiring special inspection), Section 1702, Structural Observation and Section 1703, Nondestructive Testing.

Verification: If a discrepancy is discovered in any of the above data, the project owner shall, within five days, prepare and submit an NCR describing the nature of the discrepancies to the CBO, with a copy of the transmittal letter to the CPM. The NCR shall reference the condition(s) of certification and the applicable CBC chapter and section. Within five days of resolution of the NCR, the project owner shall submit a copy of the corrective action to the CBO and the CPM. The project owner shall transmit a copy of the CBO's approval or disapproval of the corrective action to the CPM within 15 days. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action to obtain CBO's approval.

FINAL DESIGN CHANGES

STRUC-3: The project owner shall submit to the CBO design changes to the final plans required by the 1998 CBC, Chapter 1, Section 106.3.2, Submittal documents, and Section 106.3.3, Information on plans and specifications, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes, and shall give the CBO prior notice of the intended filing.

Verification: On a schedule suitable to the CBO, the project owner shall notify the CBO of the intended filing of design changes, and shall submit the required number of sets of revised drawings and the required number of copies of the other above-mentioned documents to the CBO, with a copy of the transmittal letter to the CPM. The project owner shall notify the CPM, via the Monthly Compliance Report, when the CBO has approved the revised plans.

HAZARDOUS MATERIALS TANK DESIGN

STRUC-4: Tanks and vessels containing quantities of toxic or hazardous materials exceeding amounts specified in Chapter 3, Table 3-E of the 1998 CBC shall, at a minimum, be designed to comply with Occupancy Category 2 of the 1998 CBC.

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of installation of the tanks or vessels containing the above specified quantities of highly toxic or explosive substances that

would be hazardous to the safety of the general public if released, the project owner shall submit to the CBO for review and approval, final design plans, specifications, and calculations, including a copy of the signed and stamped engineer's certification. The project owner shall send copies of the CBO approvals of plan checks to the CPM in the following Monthly Compliance Report. The project owner shall also transmit a copy of the CBO's inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

PIPING PLANS

MECH-1: Prior to the start of any increment of piping construction, the project owner shall submit, for CBO review and approval, the proposed final design drawings, specifications and calculations for each plant piping system (exclude domestic water, refrigeration systems, and small bore piping, i.e., piping and tubing with a diameter less than two and one-half inches). The submittal shall also include the applicable QA/QC procedures. The project owner shall design and install all piping, other than domestic water, refrigeration, and small bore piping to the applicable edition of the CBC. Upon completion of construction of any piping system, the project owner shall request the CBO's inspection approval of said construction [1998 CBC, Section 106.3.2, Submittal documents, Section 108.3, Inspection Requests.] The responsible mechanical engineer shall submit a signed and stamped statement to the CBO when:

- The proposed final design plans, specifications and calculations conform with all of the piping requirements set forth in the Energy Commission's Decision; and
- All of the other piping systems, except domestic water, refrigeration systems and small bore piping have been designed, fabricated and installed in accordance with all applicable ordinances, regulations, laws and industry standards, including, as applicable:
- American National Standards Institute (ANSI) B31.1 (Power Piping Code);
- ANSI B31.2 (Fuel Gas Piping Code);
- ANSI B31.3 (Chemical Plant and Petroleum Refinery Piping Code);
- ANSI B31.8 (Gas Transmission and Distribution Piping Code); and
- Specific City/County code.

The CBO may require the project owner to employ special inspectors to report directly to the CBO to monitor shop fabrication or equipment installation [1998 CBC, Section 104.2.2, Deputies.]

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of any increment of piping construction, the project owner shall submit to the CBO for approval, with a copy of the transmittal letter to the CPM, the above listed documents for that increment of construction of piping systems, including a copy of the signed and stamped engineer's certification of conformance with the Energy Commission's Decision. The project owner shall transmit a copy of the CBO's inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

PRESSURE VESSEL CERTIFICATION

MECH-2: For all pressure vessels installed in the plant, the project owner shall submit to the CBO and California Occupational Safety and Health Administration (Cal-OSHA), prior to operation, the code certification papers and other documents required by the applicable LORS. Upon completion of the installation of any pressure vessel, the project owner shall request the appropriate CBO and/or Cal-OSHA inspection of said installation [1998 CBC, Section 108.3 – Inspection Requests.]

The project owner shall:

- Ensure that all boilers and fired and unfired pressure vessels are designed, fabricated and installed in accordance with the appropriate section of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, or other applicable code. Vendor certification, with identification of applicable code, shall be submitted for prefabricated vessels and tanks; and
- Have the responsible design engineer submit a statement to the CBO that the proposed final design plans, specifications and calculations conform to all of the requirements set forth in the appropriate ASME Boiler and Pressure Vessel Code or other applicable codes.

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of on-site fabrication or installation of any pressure vessel, the project owner shall submit to the CBO for review and approval, final design plans, specifications and calculations, including a copy of the signed and stamped engineer's certification, with a copy of the transmittal letter to the CPM. The project owner shall send copies of the CBO plan check approvals to the CPM in the following Monthly Compliance Report. The project owner shall also transmit a copy of the CBO's and/or Cal-OSHA inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

HVAC PLANS

MECH-3: Prior to the start of construction of any heating, ventilating, air conditioning (HVAC) or refrigeration system, the project owner shall submit to the CBO for review and approval the design plans, specifications, calculations and quality control procedures for that system. Packaged HVAC systems, where used, shall be identified with the appropriate manufacturer's data sheets. The project owner shall design and install all HVAC and refrigeration systems within buildings and related structures in accordance with the applicable edition of the CBC. Upon completion of any increment of construction, the project owner shall request the CBO's inspection and approval of said construction. The final plans, specifications and calculations shall include approved criteria, assumptions and methods used to develop the design. In addition, the responsible mechanical engineer shall sign and stamp all plans, drawings and calculations and submit a signed statement to the CBO that the proposed final design plans, specifications and calculations conform with the applicable LORS [1998 CBC, Section 108.7, Other Inspections; Section 106.3.4, Architect or Engineer of Record.]

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of construction of any HVAC or refrigeration system, the project owner shall submit to the CBO the required HVAC and refrigeration calculations, plans and specifications, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the applicable edition of the CBC, with a copy of the transmittal letter to the CPM. The project owner shall send copies of CBO comments and approvals to the CPM in the next Monthly Compliance Report. The project owner shall transmit a copy of the CBO's inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

PLUMBING PLANS

MECH-4: Prior to the start of each increment of plumbing construction, the project owner shall submit for CBO's approval the final design plans, specifications, calculations, and QA/QC procedures for all plumbing systems, potable water systems, drainage systems (including sanitary drain and waste), toilet rooms, building energy conservation systems, and temperature control and ventilation systems, including water and sewer connection permits issued by the local agency. Upon completion of any increment of construction, the project owner shall request the CBO's inspection approval of said construction [1998 CBC, Section 108.3, Inspection Requests, Section 108.4, Approval Required.] The project owner shall design, fabricate and install:

- Plumbing, potable water, all drainage systems, and toilet rooms in accordance with Title 24, California Code of Regulations, Division 5, Part 5 and the California Plumbing Code (or other relevant section(s) of the currently adopted California Plumbing Code and Title 24, California Code of Regulations); and
- Building energy conservation systems and temperature control and ventilation systems in accordance with Title 24, California Code of Regulations, Division 5, Chapter 2-53, Part 2.

The final plans, specifications and calculations shall clearly reflect the inclusion of approved criteria, assumptions and methods used to develop the design. In addition, the responsible mechanical engineer shall stamp and sign all plans, drawings and calculations and submit a signed statement to the CBO that the proposed final design plans, specifications and calculations conform with all of the requirements set forth in the Energy Commission's Decision.

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of construction of any of the above systems, the project owner shall submit to the CBO the final design plans, specifications and calculations, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the applicable edition of the CBC, and send the CPM a copy of the transmittal letter in the next Monthly Compliance Report. The project owner shall transmit a copy of the CBO's inspection approvals to the CPM in the next Monthly Compliance Report following completion of that increment of construction.

ELECTRICAL EQUIPMENT & SYSTEMS PLANS

ELEC-1: For the 480 volts and higher systems, including switchyards, outlet lines, and termination facilities, the project owner shall not begin any increment of electrical construction until plans for that increment have been approved by the CBO. These plans, together with design changes and design change notices, shall remain on the site for one year after completion of construction. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS [1998 CBC, Section 108.4, Approval Required, and Section 108.3, Inspection Requests.] The following activities shall be reported in the Monthly Compliance Report:

- Receipt or delay of major electrical equipment;
- Testing or energization of major electrical equipment; and
- The number of electrical drawings approved, submitted for approval, and still to be submitted.

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of each increment of electrical construction, the project owner shall submit to the CBO for review and approval the final design plans, specifications and calculations for electrical equipment and systems 480 volts and greater, including a copy of the signed and stamped statement from the responsible electrical engineer attesting compliance with the applicable LORS, and send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

ELECTRICAL PLANS

ELEC-2: The project owner shall submit to the CBO the required number of copies of items A and B for review and approval and one copy of item C [CBC 1998, Section 106.3.2, Submittal documents.]

A. Final plant design plans to include:

- one-line diagrams for the 12.5 kV and 480 V systems;
- system grounding drawings;
- general arrangement or conduit drawings; and
- other plans as required by the CBO.

B. Final plant calculations to establish:

- short-circuit ratings of plant equipment;
- ampacity of feeder cables;
- voltage drop in feeder cables
- system grounding requirements;

- coordination study calculations for fuses, circuit breakers and protective relay settings for the 12.5 kV and 480 V systems;
- system grounding requirements;
- lighting energy calculations; and
- other reasonable calculations as customarily required by the CBO.

C. The following activities shall be reported to the CPM in the Monthly Compliance Report:

- receipt or delay of major electrical equipment;
- testing or energization of major electrical equipment; and
- a signed statement by the registered electrical engineer certifying that the proposed final design plans and specifications conform to requirements set forth in the Energy Commission Decision.
  Protocol: A signed statement by the registered electrical engineer certifying that the proposed final design plans and specifications conform to requirements set forth in the Energy Commission Decision.

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of each increment of electrical equipment installation, the project owner shall submit to the CBO for review and approval the final design plans, specifications and calculations, for electrical equipment and systems 480 volts and greater enumerated above, including a copy of the signed and stamped statement from the responsible electrical engineer certifying compliance with the applicable LORS. The project owner shall send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

FACILITY DESIGN

APPLICABLE LAW	DESCRIPTION
Title 24, California Code of Regulations, which adopts the current edition of the California Building Code (CBC); the 1998 CBC for design of structures; American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code; and National Electrical Manufacturers Association (NEMA) standards.	The applicable LORS for each engineering discipline, civil, structural, mechanical and electrical, are included in the application as part of the engineering appendix, Appendix N.

RELIABILITY

Plant Availability	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS** Valero expects to operate at an overall availability greater than 98 percent, well above industry standards. As a two-phase cogeneration project, the inherent reliability of the project's first phase will be enhanced by redundancy of critical equipment. *References: AFC p. 7-2; SA Reliability, pp. 5.4-3, 4.*
Maintainability	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS** Adherence to manufacturers' inspection and maintenance procedures as part of an overall plant maintenance program will cause predictable but varying levels of availability from year to year. *Reference: AFC p. 7-2; SA Reliability, pp. 5.4-3, 4.*
Fuel Availability	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS** The project will use refinery fuel gas produced from refinery processes as its primary fuel. Natural gas will be the backup fuel, for which there are ample supplies. *Reference: AFC p. 7-2; SA Reliability, p. 5.4-4.*
Water Availability	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS** Water for cooling and air pollution control will be obtained from the City of Benicia that supplies overall refinery operations. Within 3 years of certification the project will either use recycled water or reduce overall refinery water use in an amount equivalent to the project's needs. *Reference: AFC p. 7-2; SA Reliability, p. 5.4-54.*
Natural Disasters	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS** The project site is not within a flood zone. Although located within seismic zone 4, the plant will perform as well or better than others in the electric power system by complying with the latest seismic design criteria of the California Building Code. See **FACILITY DESIGN.** *Reference: AFC p. 7-2; SA Reliability, p. 5.4-5.*

RELIABILITY - GENERAL

Presently, there are no laws, ordinances, regulations or standards (LORS) that establish either power plant reliability criteria or procedures for attaining reliable operation. However, the Energy Commission must make findings as to the manner in which the project is to be designed, sited and operated to ensure safe and reliable operation (Cal. Code Regs., tit. 20, § 1752(c)). In past proceedings, the Commission has taken the approach that a project is acceptable if it does not degrade the reliability of the utility system to which it is to be connected. Thus, a project should exhibit reliability at least equal to that of other power plants on that system.

Plant Availability

The North American Electric Reliability Council (NERC) keeps industry statistics for availability factors. NERC continually polls utility companies throughout the North American continent on project reliability. In 1999, NERC reported an availability factor of 91.49 percent for combined cycle units of all sizes. The gas turbines that will be employed in the project have been on the market for several years, and can be expected to exhibit typically high availability. In fact, these new, large machines can be expected to outperform the fleet of various, mostly older and smaller, gas turbines that make up the NERC statistics.

Valero proposes to operate the project full time with only an expected shutdown annually three times for two to five days each. Additionally, one unexpected annual shutdown is anticipated for one day's duration. Based on Valero's assessment, the project would have an availability factor greater than 98 percent. This is well above industry norms for typical power plant operations. Because the cogeneration project offers many advantages to Valero, it is in the applicant's best interest to ensure the reliability of the project. In fact, the project provides benefits in terms of reliability to the refinery itself through reduced disruption from existing electrical supply. (AFC p. 7.3.)

Acceptable reliability can be accomplished by providing adequate redundancy of critical components. Equipment availability will be ensured by use of Valero's quality assurance/ quality control (QA/QC) programs during design, procurement, construction and operation of the plant, and by providing for adequate maintenance and repair of the equipment and systems.

Valero has provided an outline of the expectations for quality control from the design concept phase through project commissioning. Qualified engineers, licensed in California, will perform design. Equipment will be purchased from qualified suppliers that employ an approved QC program. Designs will be checked and equipment inspected upon receipt; installation will be inspected and systems tested. To ensure such implementation, appropriate Conditions of Certification are included in **FACILITY DESIGN**.

Maintainability

A generating facility called on to operate in baseload service for long periods of time must be capable of being maintained while operating. A typical approach for achieving this is to provide redundant examples of those pieces of equipment most likely to require service or repair. Valero plans to provide appropriate redundancy of function for the cogeneration portion of the project. The fact that the project consists of two phases of gas turbine generators/HRSGs provides inherent reliability. Failure of a non-redundant component of one train should not cause the other train to fail, thus allowing the plant to continue to generate both electricity and process steam. (AFC p. 7-2; SA Reliability, pp. 5.4-3, 4.)

Valero proposes to establish a plant maintenance program typical of the industry. Equipment manufacturers provide maintenance recommendations with their products; Valero will base its maintenance program on these recommendations. In light of these plans, the project will

be adequately maintained to ensure acceptable reliability. (AFC p. 7-2; SA Reliability, p. 5.4-4.)

Fuel Availability

The project will burn refinery fuel gas as the primary fuel and natural gas as the backup fuel. Abundant and consistent refinery fuel gas will be available, as will natural gas. (AFC p. 7-2; SA Reliability, p. 5.4-4.)

Water Availability

Valero requires some additional water resources for turbine injection and makeup. The total expected additional water consumption is about 200 gallons per minute or 0.28 MGD. Normal consumption at the refinery is approximately 5 MGD. The additional water requirements are a small percentage of the overall refinery usage.

The current water requirements for the refinery are provided by the refinery's contract with the City of Benicia and the City's agreement for North Bay Aqueduct water from the State Water Project. As required by Condition of Certification **WATER RESOURCES-2**, Valero will implement within 30 months a wastewater reuse and/or water use reduction program refinery-wide that will fully offset the amount of water used by the project.

Natural Disasters

Natural forces can threaten the reliable operation of a power plant. High winds, tsunamis (tidal waves) will not likely represent a hazard for this project, but flooding and seismic shaking (earthquake) present credible threats to reliable operation. However, the project site does not lie within a flood zone (AFC p. 2.3.1, 2.12.1; SA p. 477.)

The site lies within Seismic Zone 4. The project will be designed and constructed to the latest appropriate seismic design criteria of the California version of the Uniform Building Code. By being constructed to built to the latest, upgraded seismic design criteria, this project will likely perform at least as well as, and perhaps better than, existing plants in the electric power system. This Decision contains Conditions of Certification to ensure the project is constructed in conformity with the latest California Building Code. See **FACILITY DESIGN**.

Finding

Without Conditions of Certification, the project conforms to applicable laws related to reliability.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

RELIABILITY

APPLICABLE LAW	DESCRIPTION
None	

TRANSMISSION LINE SAFETY & NUISANCE

Electric & Magnetic Fields	**COMPLIES WITH APPLICABLE LAW & REGULATIONS** The project's shielded underground lines would produce the lowest magnetic fields possible for a line of this current-carrying capacity without impacts on safety, reliability, and efficiency. Such optimal field reduction constitutes the present CPUC requirement for maintaining power line electric or magnetic exposure within levels of insignificance. **CONDITION:** X Valero shall construct the transmission line in accordance with the CPUC's G0 – 128 for underground lines. Condition: **TSLN-1.** *Reference: SA Pub. Health, pp. 4.7-5.*
Aviation Safety	**COMPLIES WITH APPLICABLE LAW & REGULATIONS** The project will not adversely impact aviation safety since the new 1,000-foot long line is underground. *Reference:*
Radio & TV Interference	**COMPLIES WITH APPLICABLE LAW & REGULATIONS** The proposed transmission line is underground and thus will not cause radio and TV signal interference. *Reference:*
Audible Noise	**COMPLIES WITH APPLICABLE LAW & REGULATIONS** The proposed underground transmission line will not add to audible noise. *Reference:*
Fire Hazard	**COMPLIES WITH APPLICABLE LAW & REGULATIONS** Since the proposed transmission line is located entirely within the site and away from combustible materials, there is no significant fire risk from the transmission lines. *Reference:*
Shocks	**COMPLIES WITH APPLICABLE LAW & REGULATIONS** By designing the proposed transmission line underground in accordance with the CPUC General Order 128, there will not be a significant risk of hazardous or nuisance shocks. *Reference:*

TRANSMISSION LINE SAFETY & NUISANCE – GENERAL

The Warren Alquist Act requires the Commission to "prepare a written decision … which includes:

(a) Specific provisions relating to the manner in which the proposed facility is to be designed, sited, and operated in order to protect environmental quality and assure public health and safety, [and]

(d)(1) Findings regarding the conformity of the proposed site and related facilities…with public safety standards…and with other relevant local, regional, state and federal standards, ordinances, or laws…" (Pub. Resources Code, § 25523).

The proposed transmission project will consists of a single-circuit, 1,000-foot 12 kV underground distribution line extending the project to a new switch house.

Electric & Magnetic Fields

The possibility of health effects from exposure to electric and magnetic fields has increased public concern in recent years about living near high-voltage lines. Both fields occur together whenever electricity flows, hence the general practice of considering exposure to both as EMF exposure. The available evidence, as evaluated by California Public Utilities Commission (CPUC) and other regulatory agencies, has not established that such fields pose a significant health hazard to exposed humans.

However, the Energy Commission considers it important, as does the CPUC, to note that while such a hazard has not been established from the available evidence, the same evidence does not serve as proof of a definite lack of a hazard. Therefore, in light of present uncertainty, it is appropriate to reduce such fields where feasible, until the issue is better understood.

The magnetic fields of the proposed transmission line will be minimal since the line is underground and the voltage (12 kV) is at a distribution level, not a transmission level of 230 kV. As a result, the project transmission lines will produce the lowest magnetic fields possible for a line of this current-carrying capacity. Compliance with the California Public Utilities Commission General Order 128 (GO - 128) assures the magnetic field level is insignificant. (SA Pub. Health, p. 4.7-5.)

CONDITION:

X Valero shall construct the transmission line in accordance with the CPUC's G0 – 128. Condition: **TSLN-1.**

Aviation Safety

The project will not adversely impact aviation safety since the new 1,000-foot long line is underground.

Radio & TV Interference

Radio and TV interference is most commonly caused by overhead transmission lines. Since the project transmission line is underground there will be no radio or TV interference.

Audible Noise

As with radio and TV interference, the underground transmission line will not cause a potential for audible noise.

Fire Hazard

Since the proposed new transmission lines will be located entirely underground within the refinery.

Shocks

As with all underground transmission lines, the proposed connection lines will be designed according to GO-128 requirements against hazardous shocks from direct or indirect human.

Cumulative Impacts

The strengths of magnetic fields from the proposed line are the lowest possible for a line of this carrying capacity and, due to their separation from existing distribution and transmission lines within the refinery, will not contribute to their magnetic fields. There are no significant cumulative impacts.

Finding

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to transmission line safety.

CONDITIONS OF CERTIFICATION

ELECTRIC & MAGNETIC FIELDS MITIGATION

TLSN-1: The project owner shall construct the proposed transmission line according to the requirements of GO-128.

> **Verification:** Thirty days before start of transmission line construction, the project owner shall submit to the Commission's Compliance Project Manager (CPM) a letter signed by a California registered electrical engineer affirming that the transmission line will be constructed according the requirements of GO-128.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

TRANSMISSION LINE SAFETY AND NUISANCE

APPLICABLE LAW	DESCRIPTION
FEDERAL	
14 CFR Part 77 – Objects Affecting the Navigation Space	Provides regulates that specify the criteria used by the FAA for determining whether a Notice of Proposed Construction or Alteration is required for potential obstruction hazards.
Title 47 CFR §15.25	Prohibits operation of any devices producing force fields that interfere with radio communications, even if such devices are not intentionally designed to produce radio-frequency energy.
STATE	
CPUC General Order 52	Governs the construction and operation of power and communications lines
CPUC General Order 128	Specifies criteria for underground transmission lines.
Title 14 CCR §1250	Specifies utility-related measures for fire protection.
Title 8 CCR, §2700 et seq.	Establishes requirements and standards for safely installing, operating and maintaining electrical installations and equipment.
LOCAL	
There are no applicable Local LORS for this area.	

TRANSMISSION SYSTEM ENGINEERING

Grid Planning	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS**
	The proposed cogeneration project's 102 MW, 51 MW for refinery load and 51 MW for sale to the grid, can be accommodated by PG&E's electric transmission grid without creating congestion or requiring additional new facilities under normal and emergency operating conditions. *References: AFC Supp. App. D; SA TSE., 5.5-1-16; SA Supp. pp. 79-82.*
Operating Reliability & Safety	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS**
	Valero's addition of 102 MW, 51 MW for refinery load and 51 MW for sale to the grid, does not require any system upgrades at the Bahia substation or downstream in the grid. **CONDITION:** X Valero shall construct its transmission line in accordance with CPUC GO – 128 and utility industry standards. Conditions: **TSE-1 to TSE-4.** *Reference: AFC Supp. App. D; SA TSE., 5.5-1-16; SA Supp. pp. 79-82.*

TRANSMISSION SYSTEM ENGINEERING – GENERAL

The Warren Alquist Act requires the Commission to "prepare a written decision ….which includes:

> (a) Specific provisions relating to the manner in which the proposed facility is to be designed, sited, and operated in order to protect environmental quality and assure public health and safety, [and]
>
> (d)(1) Findings regarding the conformity of the proposed site and related facilities…with public safety standards…and with other relevant local, regional, state and federal standards, ordinances, or laws…"(Pub. Resources Code, § 25523).

Under California's 1996 Electricity Industry Deregulation legislation, Southern California Edison (SCE), Pacific Gas and Electric Company (PG&E), and San Diego Gas and Electric Company (SDG&E) divested most of their power plants but retained ownership their electric transmission system, under the operating control of the California Independent System Operator (Cal-ISO). Cal-ISO is responsible for ensuring electric system reliability for all participating transmission owning utilities and determines both the standards necessary to achieve reliability and whether a proposed project conforms to those standards. The Energy Commission relies on the Cal-ISO's determinations to make its finding related to applicable reliability standards and the need for additional transmission facilities. The Energy Commission conducts an environmental review of the proposed project. The Energy Commission must also consider any additional transmission facilities recommended by Cal-ISO as part of the "whole of the action" even though the additional facilities are not licensed by the Energy Commission (CCR, tit. 14, §15378).

The Valero is presently a PG&E industrial customer. The cogeneration project consists of two phases. Phase I (51 MW) is to serve all the electricity needs and much of the process steam demand of the refinery. Thus, Phase I will not put its generation out to the California grid. Rather, it will relieve the grid from supplying refinery power. Phase II (51 MW) is proposed to provide its electrical output to the grid and provide additional process steam to the refinery, thereby allowing the shutdown on another existing boiler. Phase I and Phase II will be connected to the refinery's 12.5 kV switch house, which in turn is connected to the Pacific Gas and Electric Company (PG&E) Bahia 230 kV substation, which is part of the California Independent System Operator (Cal-ISO) controlled bulk power system grid. The Cal-ISO is responsible for ensuring electric system reliability for all participating transmission owning utilities and determines both the standards necessary to achieve reliability and whether a proposed project conforms to those standards. The Energy Commission relies on the Cal-ISO's determinations to make its finding related to applicable reliability standards.

Grid Planning

PG&E performed a system impact study as the host transmission operator to determine the affects of connecting a new power plant to the existing electric grid. The initial Generator Transmission Interconnection Studies (GTIS) considered only the 51 MW produced by the Phase II aspect of the project and found no line overloads under normal conditions and no line overloaded under emergency conditions. A follow-up study assumed virtually all 102 MW (Phases I & II) of the cogeneration project were transmitted onto the grid, as if the refinery were not operating. This study also concluded that at 102 MW the project produced no line overloads under normal conditions and no line overloaded under emergency conditions. Cal-ISO has reviewed the GTIS and granted preliminary interconnection approval subject to a Facility Cost Report. With no overloads to occur and, thus, no significant additional new facilities required for interconnection of the project, the entire project meets NERC, WSCC, and Cal-ISO reliability criteria. (AFC Supp. App. D; SA Trans. Sys. Eng., 5.5-1-16; SA Supp. pp. 79-82.)

Operating Reliability & Safety

The Generator Transmission Interconnection Studies (GTIS) II found no line overloads under normal conditions and no line overloaded under emergency conditions. In addition the GTIS short circuit studies indicated that the project caused lass than a 10 percent increase in fault duty at Bahia substation. There was no equipment rating violation at the substation. (AFC Supp. App. D; SA Trans. Sys. Eng., 5.5-1-16; SA Supp. pp. 79-82.)

CONDITION:

- X Valero shall construct its transmission line in accordance with CPUC GO – 128 and utility industry standards. Conditions: **TSE-1 to TSE-4.**

Cumulative Impacts

Since the Phase I of the project will be located at the load center of the refinery, the project will not have any significant potential cumulative impacts. The Commission does not expect any cumulative impacts resulting from the operation of Phase II of the project and other proposed power plants in the main PG&E area of northern California.

Finding

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to transmission system engineering.

CONDITIONS OF CERTIFICATION

TSE-1: The project owner shall ensure that the design, construction and operation of the proposed transmission facilities will conform to all applicable LORS, including the requirements listed below. The substitution of Compliance Project Manager (CPM) and CBO approved "equivalent" equipment and equivalent substation configurations is acceptable. The project owner shall submit the required number of copies of the design drawings and calculations as determined by the CBO.

a) The power plant switchyard and outlet line shall meet or exceed the electrical, mechanical, civil and structural requirements of CPUC General Order 95 or National Electric Safety Code (NESC), Title 8 of the California Code and Regulations (Title 8), Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", National Electric Safety Code (NEC) and related industry standards.
b) Breakers and buses in the power plant switchyard and other switchyards, where applicable, shall be sized to comply with a short-circuit analysis.
c) Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner's standards.
d) Termination facilities shall comply with CPUC Rule 21 and applicable interconnection standards (PG&E).
e) The project conductors shall be sized to accommodate the full output from the 102 MW plant.
f) The project owner shall provide:
    i) The final Detailed Facility Study (DFS) including a description of facility upgrades, operational mitigation measures, and/or Remedial Action Scheme (RAS) sequencing and timing if applicable,
    ii) Executed Facility Interconnection Agreement.

Verification: At least 60 days prior to the start of construction of transmission facilities, the project owner shall submit to the CBO for approval:

a) Design drawings, specifications and calculations conforming with CPUC General Order (GO) 95 or NESC, Title 8, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", NEC, CPUC Rule 21, CPUC GO-128, applicable interconnection standards and

related industry standards, for the poles/towers, foundations, anchor bolts, conductors, underground cables, grounding systems and major switchyard equipment.

b) For each element of the transmission facilities identified above, the submittal package to the CBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst case conditions" and a statement signed and sealed by the registered engineer in responsible charge, or other acceptable alternative verification, that the transmission element(s) will conform with CPUC General Order 95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders", NEC, CPUC Rule 21, CPUC GO-128 applicable interconnection standards, and related industry standards.

c) Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in responsible charge, a route map, and an engineering description of equipment and the configurations covered by requirements **TSE-1** a) through f) above.

d) The Facilities Study and signed letter from the applicant stating that mitigation is acceptable shall be provided concurrently to the CPM and CBO. Substitution of equipment and substation configurations shall be identified and justified by the project owner for CBO approval.

TSE-2: The project owner shall inform the CPM and CBO of any impending changes, which may not conform to the requirements **TSE-1** a) through f), and have not received CPM and CBO approval, and request approval to implement such changes. A detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change shall accompany the request. Construction involving changed equipment or substation configurations shall not begin without prior written approval of the changes by the CBO and the CPM.

Verification: At least 60 days prior to the construction of transmission facilities, the project owner shall inform the CBO and the CPM of any impending changes which may not conform to requirements of **TSE-1** and request approval to implement such changes.

TSE-3: The project owner shall be responsible for the inspection of the transmission facilities during and after project construction, and any subsequent CPM and CBO approved changes thereto, to ensure conformance with CPUC GO-95 or NESC, Title 8, CCR, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders", applicable interconnection standards, CPUC GO-128, NEC and related industry standards. In case of non-conformance, the project owner shall inform the CPM and CBO in writing, within 10 days of discovering such non-conformance and describe the corrective actions to be taken.

Verification: Within 60 days after first synchronization of the project, the project owner shall transmit to the CPM and CBO:

a) "As built" engineering description(s) and one-line drawings of the electrical portion of the facilities signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with CPUC GO-95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders", CPUC GO-128, CPUC Rule 21, and applicable interconnection

standards, NEC, related industry standards, and these conditions shall be provided concurrently.

b) An “as built” engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in responsible charge or acceptable alternative verification. “As built” drawings of the mechanical, structural, and civil portion of the transmission facilities shall be maintained at the power plant and made available, if requested, for CPM audit as set forth in the “Compliance Monitoring Plan”.

c) A summary of inspections of the completed transmission facilities, and identification of any nonconforming work and corrective actions taken, signed and sealed by the registered engineer in responsible charge.

TSE-4: The applicant shall provide the following Notice to the California Independent System Operator (Cal-ISO) prior to synchronizing the facility with the California Transmission system:

1. At least one (1) week prior to synchronizing the facility with the grid for testing, provide the Cal-ISO a letter stating the proposed date of synchronization; and
2. At least one (1) business day prior to synchronizing the facility with the grid for testing, provide telephone notification to the ISO Outage Coordination Department, Monday through Friday, between the hours of 0700 to 1530 at (916)-351-2300.

Verification: The applicant shall provide copies of the Cal-ISO letter to the CPM when it is sent to the Cal-ISO one (1) week prior to initial synchronization with the grid. A report of conversation with the Cal-ISO shall be provided electronically to the CPM one (1) day before synchronizing the facility with the California transmission system for the first time.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

TRANSMISSION SYSTEM ENGINEERING

APPLICABLE LAW	DESCRIPTION
FEDERAL	
There are no applicable Federal LORS	
STATE	
CPUC General Order 95, Rules for Overhead Electric Line Construction.	Formulates uniform requirements for construction of overhead lines
CPUC Rule 21	Provides standards for the reliable connection of parallel generating stations connected to participating transmission owners.
Western Systems Coordinating Council (WSCC)	Provides the performance standards used in assessing reliability of the interconnected system.
North American Electric Reliability Council (NERC)	Provides policies, standards, principles and guides to assure the adequacy and security of the electric transmission system.
LOCAL	
There are no applicable Local LORS for this area.	

WORKER SAFETY

Fire Protection	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS** The proposed fire protection system at the site will include fire alarms, detection systems, fire hydrants, water storage, and both primary electric and backup diesel water pumps and hose stations throughout the facility. The system will be designed and operated in accordance with National Fire Protection Association (NFPA) standards and recommendations. Prior to construction and operation of the project, the Benicia Fire Department shall confirm the adequacy of the proposed fire protection systems and plans. **CONDITION:** X Valero shall submit fire protection plans for the construction and operation of the project. Conditions: **WORKER SAFETY-1**, **WORKER SAFETY-2.** *References: AFC p. 2.3.16.2; 6.11.3.1; 6.11.3.2; SA p. 102.*
Safety & Injury Prevention	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS** Construction: During the construction phase of the project, workers will be exposed to hazards typical of construction of a cogeneration facility. Construction Safety Orders are promulgated by Cal/OSHA and are applicable to the construction phase of the project. **CONDITION:** X Valero shall prepare a Construction Safety and Health Program for the review and approval of Cal/OSHA and, as appropriate, the City of Benicia Fire Department. Condition: **WORKER SAFETY-1.** Operation: Prior to operation, Valero shall prepare the Operations Safety and Health Program, which will include an Injury and Illness Prevention Program, an Emergency Action Program/Plan, a Fire Protection and Prevention Program; and a Personal Protective Equipment Program. **CONDITION:** X Valero shall prepare an Operations Safety and Health Program for the review and approval of Cal/OSHA and, as appropriate, the City of Benicia Fire Department. Condition: **WORKER SAFETY-1.** *References: AFC p. 6.11.3.1; 6.11.3.2; SA 103-104.*
Noise	**COMPLIES WITH APPLICABLE LAWS & REGULATIONS** Cal-OSHA regulations provide the maximum noise level over an 8-hour work period is 90 dBA. Areas above 85 dBA need to be posted as high noise level areas and appropriate hearing protection will be provided. Valero will also adopt a hearing conservation program in accordance with Cal-OSHA regulations. **CONDITION:** X Valero shall institute an occupational noise control program to reduce exposure to high levels of construction noise. Condition: **WORKER SAFETY-3**. X Valero shall conduct an occupational noise survey to identify noise hazardous areas and, if necessary, prepare mitigation in consultation with Cal/OSHA to reduce noise to prescribed limits. Condition: **WORKER SAFETY-4.** *Reference: AFC p. 6.4.3.1.3; 6.4.3.2.5; SA pp. 217, 220.*

WORKER SAFETY - GENERAL

The requirements for worker and fire protection are enforced through Federal, State, and local regulations. The State of California Department of Industrial Relations is charged with the responsibility for administering the Cal/OSHA plan. Effective implementation of worker safety programs at a facility is essential to the protection of workers from workplace hazards. These programs are documented through project-specific worker safety plans. Industrial workers at the proposed facility will operate equipment, handle hazardous materials, and face other workplace hazards that may result in accidents or serious injury. The worker safety and fire protection measures proposed for this project are designed to either eliminate or minimize such hazards through special training, use of protective equipment or implementation of procedural controls. (AFC p. 6.10-1; SA Haz Mat., 4.4-2-5.)

The regular Valero Benicia Refinery operators will operate the cogeneration equipment. These operators undergo a formal training process that lasts for several years and then continues with recurring training in all aspects of refinery equipment operation. The cogeneration equipment will be integrated into that training process. The project equipment is similar to equipment that is already installed at the refinery, so there will be no substantial change in requirements. Many of the operational health and safety programs are already covered by the refinery's Emergency Procedures Manual (EPM). The subcontractors who are to carry out project construction will provide the specific health and safety programs. (AFC p. 6.10-1.)

Fire Protection

The Energy Commission staff reviewed the information provided in the AFC regarding on-site fire protection, which will be adequate for fighting incipient fires. The proposed fire protection system at the site will include fire alarms, detection systems, fire hydrants, water storage, and both primary electric and backup diesel water pumps and hose stations throughout the facility. Fixed fire suppression systems will be installed at pre-determined fire risk areas, such as the transformers, turbine lubrication oil equipment, and cooling tower. The system will be designed and operated in accordance with National Fire Protection Association (NFPA) standards and recommendations. Sprinkler systems will be installed in the Control/Administration Building and Fire Pump Building, as required by NFPA requirements. Hand-held fire extinguishers will be located in accordance with NFPA 10 throughout the facility.

Valero will also be required to provide final diagrams and plans of fire protection systems to the Energy Commission and to the Benicia Fire Department, prior to construction and operation of the project, to confirm the adequacy of the proposed fire protection systems and plans. All Fire Department access roads, water mains, and fire hydrants shall be installed and operational during construction in accordance with Article 87 of the Fire Code. A final inspection by the Fire Department will be required to confirm that the facility meets all the Fire and Building Code requirements. These measures are sufficient to ensure adequate protection of workers and the public from impacts associated with fire hazards posed by the proposed facility.

CONDITION:

X Valero shall submit fire protection plans for the construction and operation of the project. Conditions**: WORKER SAFETY-1, WORKER SAFETY-2**.

Safety & Injury Prevention

Industrial environments are potentially dangerous. Workers could be exposed to chemical spills, hazardous waste, fires, moving equipment, and confined space entry and egress problems. It is important to have well-defined facility-specific policies and procedures, training, and hazard recognition and control to minimize work place hazards and to protect workers from unavoidable hazards. Energy Commission staff has reviewed Valero's proposed measures for protection of workers during construction and operation of the proposed project. These measures are described below. These measures are adequate to protect workers from work place hazards associated with the proposed project and to comply with applicable laws.

Construction: During the construction phase of the project, workers will be exposed to hazards typical of construction of a gas-fired combined cycle facility. Construction Safety Orders are published at Title 8 of the California Code of Regulations beginning with section 1502 (8 CCR § 1502, et seq.). These requirements are promulgated by Cal/OSHA and are applicable to the construction phase of the project. The Construction Injury and Illness Prevention Program will include the following:

- A Construction Safety Program;
- A Construction Personal Protective Equipment Program;
- A Construction Exposure Monitoring Program;
- A Construction Emergency Action Plan; and
- A Construction Fire Protection and Prevention Plan.

Additional programs include General Industry Safety Orders (8 CCR § 3200-6184), Electrical Safety Orders (8 CCR §2299-2974) and Unfired Pressure Vessel Safety Orders (8 CCR § 450-544). The AFC includes adequate outlines of each of the above programs. Prior to construction of the project, detailed programs and plans will be provided pursuant to the condition of certification **WORKER SAFETY-1**.

CONDITION:

X Valero shall prepare a Construction Safety and Health Program for the review and approval of Cal/OSHA and, as appropriate, the City of Benicia Fire Department. Condition: **WORKER SAFETY-1.**

Operation: Upon completion of construction and prior to operation, Valero shall prepare the Operations and Maintenance Safety and Health Program pursuant to regulatory requirements of Title 8 of the California Code of Regulations, which will include the following programs and plans:

- an Operation Injury and Illness Prevention Plan;
- an Emergency Action Plan;
- Hazardous Materials Management Program;
- Operations and Maintenance Safety Program;
- Fire Protection and Prevention Program (8 CCR § 3221); and;
- Á Personal Protective Equipment Program (8 CCR §§ 3401-3411

Additional programs also include General Industry Safety Orders (8 CCR § 3200-6184), Electrical Safety Orders (8 CCR §2299-2974) and Unfired Pressure Vessel Safety Orders (8 CCR § 450-544). The AFC includes adequate outlines of each of the above programs. Cal/OSHA will review Valero's program and provide comments as a result of a consultation request. A Cal/OSHA representative will complete a physical survey of the site, analyze work practices, and assess those practices that may likely result in illness or injury.

CONDITION:

X Valero shall prepare an Operations Safety and Health Program for the review and approval of Cal/OSHA and, as appropriate, the City of Benicia Fire Department. Condition: **WORKER SAFETY-2.**

Noise

Construction: Valero acknowledges the need to protect construction workers from noise hazards as well as the applicable laws and regulations relating to worker health and safety. The California Occupational Safety and Health Administration regulations provide the maximum noise level over an 8-hour work period is 90 dBA. Areas above 85 dBA need to be posted as high noise level areas and appropriate hearing protection will be provided. Valero will also adopt a hearing conservation program in accordance with the Cal-OSHA § 5097 Hearing Conservation Program.

CONDITION:

X Valero shall institute an occupational noise control program to reduce exposure to high levels of construction noise. Condition: **WORKER SAFETY-3.**

Operation: Valero recognizes the need to protect plant operating and maintenance personnel from noise hazards, and to comply with applicable laws and regulations. A measure to be implemented for noise-related impacts includes a Hearing Conservation Program.

CONDITION:

X Valero shall conduct an occupational noise survey to identify noise hazardous areas and, if necessary, prepare mitigation in consultation with Cal/OSHA to reduce noise to prescribed limits. Condition: **WORKER SAFETY-4.**

Finding

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to worker safety.

CONDITIONS OF CERTIFICATION

CONSTRUCTION SAFETY & HEALTH PROGRAM

WORKER SAFETY-1: The project owner shall submit to the CPM a copy of the Project Construction Injury and Illness Prevention Program, containing the following:

- A Construction Safety Program;
- A Construction Personal Protective Equipment Program;
- A Construction Exposure Monitoring Program;
- A Construction Emergency Action Plan; and
- A Construction Fire Protection and Prevention Plan.

The Safety Program, the Personal Protective Equipment Program, and the Exposure Monitoring Program shall be submitted to the CPM for review and comment concerning compliance of the program with all applicable Safety Orders. The Construction Fire Protection and Prevention Plan and Emergency Action Plan shall be submitted to the City of Benicia Fire Department for review and comment prior to submittal to the CPM.

Verification: At least 7 days prior to the start of construction, the project owner shall submit to the CPM for review and approval a copy of the Project Construction Injury and Illness Prevention Program. The project owner shall provide a letter from the City of Benicia Fire Department stating that they have reviewed and commented on the Construction Fire Protection and Prevention Plan Emergency Action Plan.

OPERATION SAFETY & HEALTH PROGRAM

WORKER SAFETY-2: The project owner shall submit to the CPM a copy of the Project Operations and Maintenance Safety and Health Program containing the following:

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

The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the Cal/OSHA Consultation Service, for review and comment concerning compliance of the program with all applicable Safety Orders. The Operation Fire Protection Plan and the Emergency Action Plan shall also be submitted to the City of Benicia Fire Department for review and acceptance.

Verification: At least 7 days prior to the start of operation, the project owner shall submit to the CPM a copy of the final version of the Project Operations and Maintenance Safety & Health Program. It shall incorporate Cal/OSHA Consultation Service's comments, stating that they have reviewed and accepted the specified elements of the proposed Operations and Maintenance Safety and Health Plan.

WORKER NOISE CONTROL PROGRAM

WORKER SAFETY-3: Prior to the start of project-related ground disturbing activities, the project owner shall submit to the CPM for review a noise control program. The noise control program shall be used to reduce employee exposure to high noise levels during construction and also to comply with applicable OSHA and Cal-OSHA standards.

Verification: At least 30 days prior to the start of project-related ground disturbing activities, the project owner shall submit to the CPM the above referenced program. The project owner shall make the program available to OSHA upon request.

WORKER NOISE SURVEY

WORKER SAFETY-4: The project owner shall conduct an occupational noise survey to identify the noise hazardous areas in the facility. The survey shall be conducted within 30 days after the facility is in full operation, and shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations, sections 5095-5099 (Article 105) and Title 29, Code of Federal Regulations, section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure. The project owner shall prepare a report of the survey results and, if necessary, identify proposed mitigation

measures that will be employed to comply with the applicable California and federal regulations.

Verification: Within 30 days after completing the survey, the project owner shall submit the noise survey report to the CPM. The project owner shall make the report available to OSHA and Cal-OSHA upon request.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

WORKER SAFETY AND FIRE PROTECTION

APPLICABLE LAW	DESCRIPTION
FEDERAL	
Title 29 CFR §651 et seq.	Established the Occupational Safety and Health Act of 1970 to protect the health and safety of workers
Title 29 CFR §1910 et seq.	Contains the minimum occupational health and safety standards for general industry in the U.S.
Title 29 CFR §1926 et seq.	Contains the minimum occupational health and safety standards for construction industry in the U.S.
Title 29 CFR §1952.170-1952-175 et seq.	Gives California full enforcement responsibility for relevant federal occupational health and safety standards.
Title 49 CFR §192	U.S. Department of Transportation Pipeline Safety Regulations. Adopted by the California Public Utility Commission. Governs the California utilities on design, construction, testing, maintenance, and operation of piping systems.

STATE	
Title 8 CCR §5144	Requirements for respiratory protection programs for construction workers.
Title 8 CCR §1920 et seq.	Regulations for fire prevention during construction.
Title 8 CCR §450-560 et seq.	Applicable requirements of the Division of Industrial Safety, including Unfired Pressure Vessel Safety Orders, Construction Safety Orders, Electrical Safety Orders, and General Industry Safety Orders.
Title 8 CCR §1509, 1514-1522, 3203, 3220-3221, 3380-3390, 3401-3411	Outlines employer requirements for preparation of Illness and Injury Prevention Program, Emergency Action Plan, Fire Prevention Plan, and Personal Protective Equipment Program for construction and operations workers.
Health & Safety Code §25915-25919.7	Outlines requirements for Asbestos Management Plan including employee notification and handling procedures. Applies to presence of asbestos in the existing Units 1 & 2.
Labor Code §142.3	Authorizes the Occupational and Safety Health Board to establish safety standards.
Labor Code §6300 et seq.	Establishes the responsibilities of the Divisions of Occupational Health and Safety.
24 CCR §501 et seq.	Building code established to provide minimum standards to safeguard human life, health, property, and public welfare by controlling design, construction, and quality of materials of building.
California Public Utility Commission General Order No. 112-E	Additional restrictions to govern the California utilities on pipeline safety.
APPLICABLE LAW	**DESCRIPTION**
INDUSTRY STANDARDS	
Uniform Fire Code Standards	Contains provisions necessary for fire prevention and information about fire safety, special occupancy uses, special processes, and explosive, flammable, combustible and hazardous materials.

GENERAL CONDITIONS
INCLUDING
COMPLIANCE MONITORING AND CLOSURE PLAN

Introduction

The project General Conditions Including Compliance Monitoring and Closure Plan (Compliance Plan) have been established as required by Public Resources Code section 25532. The plan provides a means for assuring that the facility is constructed, operated and closed in conjunction with air and water quality, public health and safety, environmental and other applicable regulations, guidelines, and conditions adopted or established by the California Energy Commission (Energy Commission) and specified in the written decision on the Application for Certification or otherwise required by law.

The Compliance Plan is composed of the following elements:

1. General conditions that:

- set forth the duties and responsibilities of the Compliance Project Manager (CPM), the project owner, delegate agencies, and others;
- set forth the requirements for handling confidential records and maintaining the compliance record;
- state procedures for settling disputes and making post-certification changes;
- state the requirements for periodic compliance reports and other administrative procedures that are necessary to verify the compliance status for all Energy Commission approved conditions; and
- establish requirements for facility closure plans.

2. Specific conditions of certification:

   Specific conditions of certification that follow each technical area contain the measures required to mitigate any and all potential adverse project impacts associated with construction, operation and closure to an insignificant level. Each specific condition of certification also includes a verification provision that describes the method of verifying that the condition has been satisfied.

GENERAL CONDITIONS OF CERTIFICATION

DEFINITIONS

To ensure consistency, continuity and efficiency, the following terms, as defined, apply to all technical areas, including Conditions of Certification:

SITE MOBILIZATION: Moving trailers and related equipment onto the site, usually accompanied by minor ground disturbance, grading for the trailers and limited vehicle parking, trenching for utilities, installing utilities, grading for an access corridor, and other related activities. Ground disturbance, grading, etc., for site mobilization are limited to the portion of the site necessary for placing the trailers and providing access

and parking for the occupants. Site mobilization is for temporary facilities and is, therefore, not considered construction.

GROUND DISTURBANCE: 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 site.

GRADING: Onsite activity conducted with earth-moving equipment that results in alteration of the topographical features of the site such a 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.] Onsite work to install permanent equipment or structures for any facility. Construction does **not** include any of 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.

Any work to provide access to the site for any of the purposes specified in a, b, c, or d, above

COMPLIANCE PROJECT MANAGER (CPM) RESPONSIBILITIES

A CPM will oversee the compliance monitoring and shall be responsible for:

1. ensuring that the design, construction, operation, and closure of the project facilities is in compliance with the terms and conditions of the Commission Decision;
2. resolving complaints;
3. processing post-certification changes to the conditions of certification, project description, and ownership or operational control;
4. documenting and tracking compliance filings; and,
5. ensuring that the compliance files are maintained and accessible.

The CPM is the contact person for the Energy Commission and will consult with appropriate responsible agencies and the Energy Commission when handling disputes, complaints and amendments.

All project compliance submittals are submitted to the CPM for processing. Where a submittal required by a condition of certification requires CPM approval, it should be understood that the approval would involve all appropriate staff and management.

The Commission has established a toll free compliance telephone number of **1-800-858-0784** for the public to contact the Commission about power plant construction or operation-related questions, complaints or concerns.

Pre-Construction and Pre-Operation Compliance Meeting
The CPM may schedule pre-construction and pre-operation compliance meetings prior to the projected start-dates of construction, plant operation, or both. The purpose of these meetings will be to assemble both the Energy Commission's and the project owner's technical staff to review the status of all pre-construction or pre-operation requirements contained in the Energy Commission's conditions of certification to confirm that they have been met, or if they have not been met, to ensure that the proper action is taken. In addition, these meetings shall ensure, to the extent possible, that Energy Commission conditions will not delay the construction and operation of the plant due to oversight or inadvertence and to preclude any last minute, unforeseen issues from arising. Pre-construction meetings held during the certification process must be publicly noticed unless they are confined to administrative issues and processes.

Energy Commission Record
The Energy Commission shall maintain as a public record, in either the Compliance file or Docket file, for the life of the project (or other period as required):

1. all documents demonstrating compliance with any legal requirements relating to the construction and operation of the facility;
2. all monthly and annual compliance reports filed by the project owner;
3. all complaints of noncompliance filed with the Energy Commission; and,
4. all petitions for project or condition changes and the resulting staff or Energy Commission action taken.

PROJECT OWNER RESPONSIBILITIES
It is the responsibility of the project owner to ensure that the general compliance conditions and the conditions of certification are satisfied. The general compliance conditions regarding post-certification changes specify measures that the project owner must take when requesting changes in the project design, compliance conditions, or ownership. Failure to comply with any of the conditions of certification or the general compliance conditions may result in reopening of the case and revocation of Energy Commission certification, an administrative fine, or other action as appropriate.

Access
The CPM, responsible Energy Commission staff, and delegate agencies or consultants, shall be guaranteed and granted unrestricted access to the power plant site, related facilities, project-related staff, and the records maintained on site, for the purpose of conducting audits, surveys, inspections, or general site visits. Although the CPM will normally schedule site visits on dates and times agreeable to the project owner, the CPM reserves the right to make unannounced visits at any time.

Compliance Record
The project owner shall maintain project files on-site or at an alternative site approved by the CPM, for the life of the project. The files shall contain copies of all "as-built" drawings, all documents submitted as verification for conditions, and all other project-related documents for the life of the project, unless a lesser period is specified by the conditions of certification.

Energy Commission staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files.

Compliance Verifications
Each condition of certification is followed by a means of "verification". The verification describes the Energy Commission's procedure(s) to ensure post-certification compliance with adopted conditions. The verification procedures (including verification lead times), unlike the conditions, may be modified, as necessary by the CPM, and in most cases without full Energy Commission approval.

Verification of compliance with the conditions of certification can be accomplished by:

1. reporting on the work done and providing the pertinent documentation in monthly and/or annual compliance reports filed by the project owner or authorized agent as required by the specific conditions of certification;
2. appropriate letters from delegate agencies verifying compliance;
3. Energy Commission staff audits of project records; and/or
4. Energy Commission staff inspections of mitigation and/or other evidence of mitigation.

Verification lead times (e.g., 90, 60 and 30-days) associated with start of construction may require the project owner to file submittals during the certification process, particularly if construction is planned to commence shortly after certification.

A cover letter from the project owner or authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. **The cover letter subject line shall identify the involved condition(s) of certification by condition number and include a brief description of the subject of the submittal**. The project owner shall also identify those submittals **not** required by a condition of certification with a statement such as: "This submittal is for information only and is not required by a specific condition of certification." When submitting supplementary or corrected information, the project owner shall reference the date of the previous submittal.

The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed by the project owner or an agent of the project owner.

All submittals shall be addressed as follows:

Compliance Project Manager
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814

If the project owner desires Energy Commission staff action by a specific date, they shall so state in their submittal and include a detailed explanation of the effects on the project if this date is not met.

Compliance Reporting
There are two different compliance reports that the project owner must submit to assist the CPM in tracking activities and monitoring compliance with the terms and conditions of the Commission

Decision. During construction, the project owner or authorized agent will submit Monthly Compliance Reports. During operation, an Annual Compliance Report must be submitted. These reports, and the requirement for an accompanying compliance matrix, are described below. The majority of the conditions of certification require that compliance submittals be submitted to the CPM in the monthly or annual compliance reports.

Compliance Matrix

A compliance matrix shall be submitted by the project owner to the CPM along with each monthly and annual 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 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 (e.g., “not started”, “in progress” or “completed date”).

Completed or satisfied conditions do not need to be included in the compliance matrix after they have been identified as completed/satisfied in at least one monthly or annual compliance report.

Pre-Construction Matrix

Prior to commencing construction a compliance matrix addressing only those conditions 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 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 certified. In some cases it may be necessary for the project owner to file submittals prior to certification 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 certification 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 certification 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.

Monthly Compliance Report

The first 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 certification (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 certification;

9. a listing of the month's additions to the on-site compliance file; and

10. any requests to dispose of items that are required to be maintained in the project owner's compliance file.

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.

Annual Compliance Report

After the air district has issued a Permit to Operate, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports. The reports are for each year of commercial operation and are due to the CPM each year at a date agreed to by the CPM. Annual Compliance Reports shall be submitted over the life of the project unless otherwise specified by the CPM. Each Annual Compliance Report shall identify the reporting period and shall contain the following:

1. an updated compliance matrix which shows the status of all conditions of certification (fully satisfied and/or closed conditions do not need to be included in the matrix after they have been reported as closed);

2. a summary of the current project operating status and an explanation of any significant changes to facility operations during the year;

3. documents required by specific conditions to be submitted along with the Annual Compliance Report. Each of these items must be identified in the transmittal letter, and should be submitted as attachments to the Annual Compliance Report;

4. a cumulative listing of all post-certification changes approved by the Energy Commission or cleared by the CPM;

5. an explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;

6. a listing of filings made to, or permits issued by, other governmental agencies during the year;

7. a projection of project compliance activities scheduled during the next year;

8. a listing of the year's additions to the on-site compliance file, and

9. an evaluation of the on-site contingency plan for unexpected facility closure, including any suggestions necessary for bringing the plan up to date [see General Conditions for Facility Closure addressed later in this section].

10. a listing of complaints, notices of violation, official warnings, and citations received during the year; a description of the resolution of any complaints which have been resolved, and the status of any unresolved complaints.

Confidential Information

Any information, which the project owner deems confidential shall be submitted to the Energy Commission's Docket with an application for confidentiality pursuant to Title 20, California Code of Regulations, section 2505(a). Any information, which is determined to be confidential, shall be kept confidential as provided for in Title 20, California Code of Regulations, section 2501 et. seq.

Department of Fish and Game Filing Fee
Pursuant to the provisions of Fish and Game Code Section 711.4, the project owner shall pay a filing fee in the amount of eight hundred and fifty dollars ($850). The payment instrument shall be provided to the Commission's Project Manager at the time of project certification and shall be made payable to the California Department of Fish and Game. The Commission's Project Manager will submit the payment to the Office of Planning and Research at the time of filing of the notice of decision pursuant to Public Resources Code Section 21080.5.

Reporting of Complaints, Notices, and Citations
Prior to the start of construction, the project owner must send a letter to property owners living within one mile of the project notifying them of a telephone number to contact project representatives with questions, complaints or concerns. If the telephone is not staffed 24 hours per day, it shall include automatic answering, with date and time stamp recording. The telephone number shall be posted at the project site and easily visible to passersby during construction and operation.

In addition to the monthly and annual compliance reporting requirements described above, the project owner shall report and provide copies of all complaint forms, notices of violation, notices of fines, official warnings, and citations, within 10 days of receipt, to the CPM. Complaints shall be logged and numbered. Noise complaints shall be recorded on the form provided in the **NOISE** conditions of certification. All other complaints shall be recorded on the complaint form on the following page.

COMPLAINT REPORT/RESOLUTION FORM

PROJECT NAME: **AFC Number:**
COMPLAINT LOG NUMBER _____ Complainant's name and address: Phone number:
Date and time complaint received: Indicate if by telephone or in writing (attach copy if written): Date of first occurrence:
Description of complaint (including dates, frequency, and duration):
Findings of investigation by plant personnel: Indicate if complaint relates to violation of a CEC requirement: Date complainant contacted to discuss findings:
Description of corrective measures taken or other complaint resolution: Indicate if complainant agrees with proposed resolution: If not, explain: Other relevant information:
If corrective action necessary, date 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: _____ Date:

(Attach additional pages and supporting documentation, as required.)

FACILITY CLOSURE

At some point in the future, the project will cease operation and close down. At that time, it will be necessary to ensure that the closure occurs in such a way that public health and safety and the environment are protected from adverse impacts. Although the project setting for this project does not appear, at this time, to present any special or unusual closure problems, it is impossible to foresee what the situation will be in 30 years or more when the project ceases operation. Therefore, provisions must be made which provide the flexibility to deal with the specific situation and project setting that exist at the time of closure. LORS pertaining to facility closure are identified in the sections dealing with each technical area. Facility closure will be consistent with LORS in effect at the time of closure.

There are at least three circumstances in which a facility closure can take place, planned closure, unexpected temporary closure and unexpected permanent closure.

Planned Closure

A planned closure occurs at the end of a project's life, when the facility is closed in an anticipated, orderly manner, at the end of its useful economic or mechanical life, or due to gradual obsolescence.

Unexpected Temporary Closure

An unplanned unexpected temporary closure occurs when the facility is closed suddenly and/or unexpectedly, on a short-term basis, due to unforeseen circumstances such as a natural disaster, or an emergency.

Unexpected Permanent Closure

An unplanned unexpected permanent closure occurs if the project owner closes the facility suddenly and/or unexpectedly, on a permanent basis. This includes unexpected closure where the owner remains accountable for implementing the on-site contingency plan. It can also include unexpected closure where the project owner is unable to implement the contingency plan, and the project is essentially abandoned.

General Conditions for Facility Closure

Planned Closure

In order to ensure that a planned facility closure does not create adverse impacts, a closure process that provides for careful consideration of available options and applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of closure, will be undertaken. To ensure adequate review of a planned project closure, the project owner shall submit a proposed facility closure plan to the Energy Commission for review and approval at least twelve months prior to commencement of closure activities (or other period of time agreed to by the CPM). The project owner shall file 120 copies (or other number of copies agreed upon by the CPM) of a proposed facility closure plan with the Energy Commission.
The plan shall:

1. identify and discuss any impacts and mitigation to address significant adverse impacts associated with proposed closure activities and to address facilities, equipment, or other project related remnants that will remain at the site.

2. identify a schedule of activities for closure of the power plant site, transmission line corridor, and all other appurtenant facilities constructed as part of the project;

3. identify any facilities or equipment intended to remain on site after closure, the reason, and any future use; and

4. address conformance of the plan with all applicable laws, ordinances, regulations, standards, local/regional plans in existence at the time of facility closure, and applicable conditions of certification.

Also, in the event that there are significant issues associated with the proposed facility closure plan's approval, or the desires of local officials or interested parties are inconsistent with the plan, the CPM shall hold one or more workshops and/or the Commission may hold public hearings as part of its approval procedure.

In addition, prior to submittal of the proposed facility closure plan, a meeting shall be held between the project owner and the Commission CPM for the purpose of discussing the specific contents of the plan.

As necessary, prior to, or during the closure plan process, the project owner shall take appropriate steps to eliminate any immediate threats to public health and safety and the environment, but shall not commence any other closure activities, until Commission approval of the facility closure plan is obtained.

Unexpected Temporary Closure

In order to ensure that public health and safety and the environment are protected in the event of an unexpected temporary facility closure, it is essential to have an on-site contingency plan in place. The on-site contingency plan will help to ensure that all necessary steps to mitigate public health and safety, and environmental impacts, are taken in a timely manner.

The project owner shall submit an on-site contingency plan for CPM review and approval. The plan shall be submitted no less that 60 days (or other time agreed to by the CPM) prior to commencement of commercial operation. The approved plan must be in place prior to commercial operation of the facility and shall be kept at the site at all times.

The project owner, in consultation with the CPM, will update the on-site contingency plan as necessary. The CPM may require revisions to the on-site contingency plan over the life of the project. In the annual compliance reports submitted to the Energy Commission, the project owner will review the on-site contingency plan, and recommend changes to bring the plan up to date. Any changes to the plan must be approved by the CPM.

The on-site contingency plan shall provide for taking immediate steps to secure the facility from trespassing or encroachment. In addition, for closures of more than 90 days (unless other arrangements are agreed to by the CPM), the plan shall provide for removal of hazardous materials and hazardous wastes, draining of all chemicals from storage tanks and other equipment and the safe shutdown of all equipment (also see specific conditions of certification for the technical areas of Hazardous Materials Management and Waste Management).

In addition, consistent with requirements under unexpected permanent closure addressed below, the nature and extent of insurance coverage, and major equipment warranties must also be included in the on-site contingency plan. In addition, the status of the insurance coverage and major equipment warranties must be updated in the annual compliance reports.

In the event of an unexpected temporary closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, e-mail, etc., within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the circumstances and expected duration of the closure.

If the CPM determines that a temporary closure is likely to be permanent, or for a duration of more than twelve months, a closure plan consistent with that for a planned closure shall be developed and submitted to the CPM within 90 days of the CPM's determination (or other period of time agreed to by the CPM).

Unexpected Permanent Closure
The on-site contingency plan required for unexpected temporary closure shall also cover unexpected permanent facility closure. All of the requirements specified for unexpected temporary closure shall also apply to unexpected permanent closure.

In addition, the on-site contingency plan shall address how the project owner will ensure that all required closure steps will be successfully undertaken in the unlikely event of abandonment.

In the event of an unexpected permanent closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, e-mail, etc., within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the status of all closure activities.

A closure plan consistent with that for a planned closure shall be developed and submitted to the CPM within 90 days of the permanent closure (or other period of time agreed to by the CPM).

DELEGATE AGENCIES
To the extent permitted by law, the Energy Commission may delegate authority for compliance verification and enforcement to various state and local agencies that have expertise in subject areas where specific requirements have been established as a condition of certification. If a delegate agency does not participate in this program, the Energy Commission staff will establish an alternative method of verification and enforcement. Energy Commission staff reserves the right to independently verify compliance.

In performing construction and operation monitoring of the project, the Energy Commission staff acts as, and has the authority of, the Chief Building Official (CBO). The Commission staff retains this authority when delegating to a local CBO. Delegation of authority for compliance verification includes the authority for enforcing codes, the responsibility for code interpretation where required, and the authority to use discretion, as necessary, in implementing the various codes and standards.

Whenever an agency's responsibility for a particular area is transferred by law to another entity, all references to the original agency shall be interpreted to apply to the successor entity.

ENFORCEMENT
The Energy Commission's legal authority to enforce the terms and conditions of its Decision is specified in Public Resources Code sections 25534 and 25900. The Energy Commission may amend or revoke the certification for any facility, and may impose a civil penalty for any significant failure to comply with the terms or conditions of the Commission Decision. The specific action and amount of any fines the Commission may impose would take into account the specific circumstances of the incident(s). This would include such factors as the previous compliance history, whether the cause of the incident involves willful disregard of LORS, inadvertence, unforeseeable events, and other factors the Commission may consider.

Moreover, to ensure compliance with the terms and conditions of certification and applicable laws, ordinances, regulations, and standards, delegate agencies are authorized to take any action allowed by law in accordance with their statutory authority, regulations, and administrative procedures.

NONCOMPLIANCE COMPLAINT PROCEDURES

Any person or agency may file a complaint alleging noncompliance with the conditions of certification. Such a complaint will be subject to review by the Energy Commission pursuant to Title 20, California Code of Regulations, section 1230 et. seq., but in many instances the noncompliance can be resolved by using the informal dispute resolution process. Both the informal and formal complaint procedure, as described in current State law and regulations, are described below. They shall be followed unless superseded by current law or regulations.

Informal Dispute Resolution Procedure

The following procedure is designed to informally resolve disputes concerning interpretation of compliance with the requirements of this compliance plan. The project owner, the Energy Commission, or any other party, including members of the public, may initiate this procedure for resolving a dispute. Disputes may pertain to actions or decisions made by any party including the Energy Commission's delegate agents.

This procedure may precede the more formal complaint and investigation procedure specified in Title 20, California Code of Regulations, section 1230 et. seq., but is not intended to be a substitute for, or prerequisite to it. This informal procedure may not be used to change the terms and conditions of certification as approved by the Energy Commission, although the agreed upon resolution may result in a project owner, or in some cases the Energy Commission staff, proposing an amendment.

The procedure encourages all parties involved in a dispute to discuss the matter and to reach an agreement resolving the dispute. If a dispute cannot be resolved, then the matter must be referred to the full Energy Commission for consideration via the complaint and investigation process. The procedure for informal dispute resolution is as follows:

Request for Informal Investigation

Any individual, group, or agency may request the Energy Commission to conduct an informal investigation of alleged noncompliance with the Energy Commission's terms and conditions of certification. All requests for informal investigations shall be made to the designated CPM.

Upon receipt of a request for informal investigation, the CPM shall promptly notify the project owner of the allegation by telephone and letter. All known and relevant information of the alleged noncompliance shall be provided to the project owner and to the Energy Commission staff. The CPM will evaluate the request and the information to determine if further investigation is necessary. If the CPM finds that further investigation is necessary, the project owner will be asked to promptly investigate the matter and within seven (7) working days of the CPM's request, provide a written report of the results of the investigation, including corrective measures proposed or undertaken, to the CPM. Depending on the urgency of the noncompliance matter, the CPM may conduct a site visit and/or request the project owner to provide an initial report, within forty-eight (48) hours, followed by a written report filed within seven (7) days.

Request for Informal Meeting

In the event that either the party requesting an investigation or the Energy Commission staff is not satisfied with the project owner's report, investigation of the event, or corrective measures undertaken, either party may submit a written request to the CPM for a meeting with the project owner. Such request shall be made within fourteen (14) days of the project owner's filing of its written report. Upon receipt of such a request, the CPM shall:

1. immediately schedule a meeting with the requesting party and the project owner, to be held at a mutually convenient time and place;

2. secure the attendance of appropriate Energy Commission staff and staff of any other agency with expertise in the subject area of concern as necessary;

3. conduct such meeting in an informal and objective manner so as to encourage the voluntary settlement of the dispute in a fair and equitable manner; and,

4. after the conclusion of such a meeting, promptly prepare and distribute copies to all in attendance and to the project file, a summary memorandum which fairly and accurately identifies the positions of all parties and any conclusions reached. If an agreement has not been reached, the CPM shall inform the complainant of the formal complaint process and requirements provided under Title 20, California Code of Regulations, section 1230 et. seq.

Formal Dispute Resolution Procedure-Complaints and Investigations
If either the project owner, Energy Commission staff, or the party requesting an investigation is not satisfied with the results of the informal dispute resolution process, such party may file a complaint or a request for an investigation with the Energy Commission's General Counsel. Disputes may pertain to actions or decisions made by any party including the Energy Commission's delegate agents. Requirements for complaint filings and a description of how complaints are processed are in Title 20, California Code of Regulations, section 1230 et. seq.

The Chairman, upon receipt of a written request stating the basis of the dispute, may grant a hearing on the matter, consistent with the requirements of noticing provisions. The Commission shall have the authority to consider all relevant facts involved and make any appropriate orders consistent with its jurisdiction (Title 20, California Code of Regulations, sections 1232 - 1236).

POST CERTIFICATION CHANGES TO THE COMMISSION DECISION: AMENDMENTS, INSIGNIFICANT PROJECT CHANGES AND VERIFICATION CHANGES

The project owner must petition the Energy Commission, pursuant to Title 20, California Code of Regulations, section 1769, to 1) delete or change a condition of certification; 2) modify the project design or operational requirements; and 3) transfer ownership or operational control of the facility.

A petition is required for **amendments** and for **insignificant project changes**. For verification changes, a letter from the project owner is sufficient. In all cases, the petition or letter requesting a change should be submitted to the Commission's Docket in accordance with Title 20, California Code of Regulations, section 1209.

The criteria that determine which type of change process applies are explained below.

Amendment (1769(A)(3))
A proposed project modification will be processed as an amendment if it alters the intent or purpose of a condition of certification, has potential for significant adverse environmental impact, may violate applicable laws, ordinances, regulations or standards, or involves an ownership change.

Insignificant project Change (1769(A)(2))
If a proposed modification does not alter the intent or purpose of a condition of certification, have potential for significant adverse environmental impact, violate applicable laws, ordinances, regulations, or standards, or result in an ownership change, it will be processed in accordance with Section 1769(a)(2). In this regard, as specified in Section 1769(a)(92), Commission approval is not required.

Verification Change

The proposed change will be processed as a verification change if it involves only the language in the verification portion of the condition of certification. This procedure can only be used to change verification requirements that are of an administrative nature, usually the timing of a required action. In the unlikely event that verification language contains technical requirements, the proposed change must be processed as an amendment.

KEY EVENT LIST

PROJECT _____ DATE ENTERED

DOCKET # _____ PROJECT MANAGER

EVENT DESCRIPTION	***DATE ASSIGNED***
Date of Certification	
Start of Construction	
Completion of Construction	
Start of Operation (1st Turbine Roll)	
Start of Rainy Season	
End of Rainy Season	
Start T/L Construction	
Complete T/L Construction	
Start Fuel Supply Line Construction	
Complete Fuel Supply Line Construction	
Start Rough Grading	
Complete Rough Grading	
Start of Water Supply Line Construction	
Completion of Water Supply Line Construction	
Start Implementation of Erosion Control Measures	
Complete Implementation of Erosion Control Measures	

CONSTRUCTION MILESTONES

The following is the procedure for establishing and enforcing milestones, which includes milestone dates for pre-construction and construction phases of the project. Milestones and method of verification must be established and agreed upon by the project owner and the CPM no later than 30 days after the final decision becomes effective. If this deadline is not met, the CPM will establish the milestones.

I. **ESTABLISH PRE-CONSTRUCTION MILESTONES TO ENABLE START OF CONSTRUCTION WITHIN ONE YEAR OF CERTIFICATION**

1. Obtain site control.
2. Obtain financing.
3. Mobilize site.
4. Begin rough grading for permanent structures (start of construction).

II. **ESTABLISH CONSTRUCTION MILESTONES FROM DATE OF START OF CONSTRUCTION**

1. Begin pouring major foundation concrete.
2. Begin installation of major equipment.
3. Complete installation of major equipment.
4. Begin gas pipeline construction.
5. Complete gas pipeline interconnection.
6. Begin T-line construction.
7. Complete T-line interconnection.
8. Begin commercial operation.

The CPM will negotiate the above-cited pre-construction and construction milestones with the project owner based on an expected schedule of construction. The CPM may agree to modify the final milestones from those listed above at any time prior to or during construction if the project owner demonstrates good-cause for not meeting the originally-established milestones. Otherwise, failure to meet milestone dates without a finding of good cause is considered cause for possible forfeiture of certification or other penalties.

III. **A finding that there is good cause for failure to meet milestones will be made if any of the following criteria are met:**

1. The change in any milestone does not change the established commercial operation date milestone.
2. The milestone is changed due to circumstances beyond the project owner's control.
3. The milestone will be missed, but the project owner demonstrates a good-faith effort to meet the project milestone.
4. The milestone is missed due to unforeseen natural disasters or acts of God which prevent timely completion of the milestones.

If a milestone date cannot be met, the CPM will make a determination whether the project owner has demonstrated good cause for failure to meet the milestone. If the determination is that good cause exists, the CPM will negotiate revised milestones.

If the project owner fails to meet one or more of the established milestones and the CPM determines that good cause does not exist, the CPM will make a recommendation to the Executive Director. Upon receiving such recommendation, the Executive Director will take one of the following actions.

1. Conclude that good cause exists and direct that revised milestones be established; or
2. Issue a reprimand, recommend a fine pursuant to Public Resources Code sections 25534 and 25534.1, or take other appropriate remedial action and direct that revised milestones be established; or
3. Recommend, after consulting with the Energy Facility Siting and Environmental Committee, that the Commission issue a finding that the project owner has forfeited the project's certification.

ADOPTION ORDER

The Commission adopts this Decision on the Valero Cogeneration Project and incorporates the Presiding Member's Proposed Decision. This Decision is based upon the record of the proceeding (Docket No. 01-AFC-05).

The Commission hereby adopts the following findings in addition to those contained in the accompanying text:

1. The Conditions of Certification contained in this Decision, if implemented by the project owner, ensure that the whole of the project will be designed, sited and operated in conformity with applicable local, regional, state, and federal laws, ordinances, regulations, and standards, including applicable public health and safety standards, and air and water quality standards.

2. Implementation of the Conditions of Certification contained in the accompanying text will ensure protection of environmental quality and assure reasonably safe and reliable operation of the facility. The Conditions of Certification also assure that the project will neither result in, nor contribute substantially to, any significant direct, indirect, or cumulative adverse environmental impacts.

3. Existing governmental land use restrictions are sufficient to adequately control population density in the area surrounding the facility and may be reasonably expected to ensure public health and safety.

4. The record does not establish the existence of any environmentally superior alternative site.

5. The analysis of record assesses all potential environmental impacts associated with the 102 MW configuration.

6. This Decision contains measures to ensure that the planned, temporary, or unexpected closure of the project will occur in conformance with applicable laws, ordinances, regulations, and standards.

7. The proceedings leading to this Decision have been conducted in conformity with the applicable provisions of Commission regulations governing the consideration of an Application for Certification and thereby meet the requirements of Public Resources Code, sections 21000 et seq., and 25500 et seq. Since the project's submitted configuration has at all times been cogeneration, this Decision is not made pursuant to Public Resources Code, section 25552.

Therefore, the Commission ORDERS the following:

1. The Application for Certification of the Valero Refining Company in California, as described in this Decision, is hereby approved, and a certificate to construct and operate the project is hereby granted.

2. The approval of the Application for Certification is subject to the timely performance of the Conditions of Certification and Compliance Verifications enumerated in the accompanying text. The Conditions and Compliance Verifications are integrated with this Decision and are not severable therefrom. While the project owner may delegate the performance of a Condition or Verification, the duty to ensure adequate performance of a Condition or Verification may not be delegated.

3. For purposes of reconsideration pursuant to Public Resources Code section 25530, this Decision is deemed adopted when filed with the Commission's Docket Unit.

4. For purposes of judicial review pursuant to Public Resources Code section 25531, this Decision is final thirty (30) days after its filing in the absence of the filing of a petition for reconsideration or, if a petition for reconsideration is filed within thirty (30) days, upon the adoption and filing of an Order upon reconsideration with the Commission's Docket Unit.

5. The Commission hereby adopts the Conditions of Certification, Compliance Verifications, and associated dispute resolution procedures as part of this Decision in order to implement the compliance monitoring program required by Public Resources Code section 25532. All Conditions in this Decision take effect immediately upon adoption and apply to all construction and site preparation activities including, but not limited to, ground disturbance, site preparation, and permanent structure construction.

6. The Executive Director of the Commission shall transmit a copy of this Decision and appropriate accompanying documents as provided by Public Resources Code section 25537 and California Code of Regulations, title 20, section 1768.

Dated:

ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION

WILLIAM J. KEESE
Chairman

MICHAL C. MOORE
Commissioner

ROBERT A. LAURIE
Commissioner

ROBERT PERNELL
Commissioner

ARTHUR H. ROSENFELD
Commissioner