

Executive Summary

1.1 Introduction

This Application for Certification (AFC) for the Eastshore Energy Center (Eastshore) has been prepared by Eastshore Energy, LLC, in accordance with the California Energy Commission's (CEC) Power Plant Site Certification Regulations (California Code of Regulations, Title 20, Section 1704 et seq. – the 12-month AFC regulations). This executive summary provides an overview of the project in accordance with Appendix B, Section (a), of the regulations.

This AFC has been prepared in accordance with CEC guidelines and provides the following:

- A detailed description of Eastshore
- An assessment of Eastshore's likely impact on the existing environment
- Measures proposed by Eastshore to mitigate potential impacts and ensure that environmental issues are properly and responsibly addressed
- A discussion of compliance with applicable laws, ordinances, regulations, and standards (LORS)

1.2 Project Overview

Eastshore Energy, LLC, proposes to develop Eastshore in the industrial zoned area of the City of Hayward (Figure 1.2-1, figures are located at the end of the section) in Alameda County, California. Eastshore will be a high-efficiency, nominal 115.5-MW (net), intermediate/peaking load facility using fourteen state-of-the-art natural gas-fired lean burn, spark-ignited reciprocating engines. Eastshore will tie into Pacific Gas & Electric Company's (PG&E) Eastshore substation, providing much-needed local reliability for the City of Hayward and voltage support to the regional 230 kilovolt (kV) transmission system during peak demand hours and when other generation is not available.

Eastshore was selected by PG&E as a result of its 2004 Request for Offers for new generation resources. The Eastshore project was one of seven selected projects. Eastshore is strategically located within an area that needs 230-kV voltage support and will benefit from local generation. When operating, Eastshore will service local loads which are fed from PG&E's 115-kV distribution system, reducing inefficiencies from importing power on the 230-kV transmission system that must be dropped to 115-kV to service local loads. In addition Eastshore's quick start capability will allow it to respond to unexpected changes in regional demands from higher than expected summer temperatures, other facilities tripping offline, or sudden changes in renewable power generation such as wind. Because Eastshore will employ multiple units, this facility will be inherently highly reliable - the loss of one unit will only reduce overall facility capacity by 7%. Eastshore offers the following key benefits:

- Local electric reliability for the City of Hayward
 - Local generation of 115.5 MW at Eastshore Substation reduces reliance on imported power
 - Direct tie-in to 115 kV feeds Hayward’s local distribution system
- Voltage support for PG&E’s regional 230 kV transmission system
 - Generation interconnecting at 115 kV at Eastshore Substation allows more efficient use of energy on regional 230 kV transmission system
- Multiple unit installation increases reliability and availability of local generation
- Fast-start capability (under 10 minutes from zero to 115.5 MW) provides quick response to peak electricity demand
- Closed-loop cooling system eliminates excessive water use and eliminates visible cooling tower plumes
- Low profile installation is compatible with surrounding industrial and commercial setting
- Creation of temporary construction jobs and permanent operation jobs
- Purchase of local goods and services as well as property and sales tax revenues, contribute to the local economy
- No significant environmental impacts

Eastshore will be located at 25101 Clawiter Road in the City, in Alameda County, California, on a 6.22-acre industrial parcel owned by Eastshore Energy, LLC. Major elements of the Eastshore project include the following:

- Demolition of the existing site building, foundations, and paved surfaces
- Grading of site and installation of new foundations, piping, and utility connections
- 14 nominal 8.4-MW (gross) Wartsila 20V34SG natural gas-fired, spark-ignited reciprocating engine-generator sets
- 14 state-of-the-art air pollution control systems representing best available control technology (BACT), one system per engine, consisting of a selective catalytic reduction (SCR) unit for oxides of nitrogen (NO_x) control and an oxidation catalyst unit for carbon monoxide (CO) and precursor organic compounds (POC) control
- 14 approximately 70-foot tall stacks, each with a separate continuous emissions monitoring system (CEMS)
- An acoustically engineered main building enclosing the 14 engines, workshop and control room
- Closed-loop cooling system consisting of multiple fan-cooled radiator assemblies outside the main engine building

- Two 10,000-gallon aqueous (19 percent by weight) ammonia storage tanks and handling system serving the SCR units
- One approximately 35,000-gallon raw water storage tank
- One nominal 225-kW diesel-fired emergency black start generator
- Miscellaneous ancillary equipment
- Onsite water and wastewater service interconnections
- Onsite 115-kV switchyard, including switchgear and step-up voltage transformers
- Approximately 1.1 miles of 115-kV, single-circuit transmission line connecting to PG&E's Eastshore Substation
- Approximately 200-foot offsite natural gas line connection to PG&E Line 153
- Chain-link security fencing to enclose the facility, with a secured entrance on Clawiter Road
- A 4.65-acre temporary construction laydown and parking area immediately across Clawiter Road from the Eastshore site

A photograph of the Eastshore site and an artistic rendering of Eastshore following completion of construction are shown on Figures 1.2-2a and 1.2-2b, respectively. A schematic arrangement of the site plan and site elevation drawings are shown on Figures 1.2-3, 1.2-4a and 1.2-4b, respectively. Figure 1.2-1 shows the proposed route for the transmission line that will connect the project to PG&E's Eastshore substation.

Eastshore will consist of 14 Wartsila 20V34SG natural gas-fired reciprocating engine generator sets. Total site generating capacity is approximately 118 MW gross, or 115.5 MW net. Each generator set will have a gross capacity of approximately 8.4 MW based on a design temperature range of 32 to 100 degrees Fahrenheit. Eastshore will be permitted to operate up to 4,000 hours annually, which is equivalent to an annual capacity factor of 45.7 percent. Eastshore's actual operating profile will depend on PG&E's dispatch pattern consistent with the terms of Eastshore Energy, LLC's Power Purchase Agreement.

The Eastshore site is currently covered by a large industrial building and asphalt paving. The site and building were previously used as a metal stamping facility for the manufacture of automobile parts until mid-2004. The site is currently being offered for lease by Eastshore Energy, LLC, to third parties for general warehousing operations. Any such leases will be terminated in fall 2007, prior to the start of plant construction. The building, foundations, and existing paved surfaces will be demolished as part of Eastshore construction.

Eastshore will connect to PG&E's electric transmission system at the Eastshore Substation, approximately 1.1 miles south of the Eastshore site. The proposed route runs south along the east side of Clawiter Road for approximately 3,400 feet before an approximately 200-foot overcrossing of State Route (SR) 92 and then continues west along Eden Landing Road, south along Production Avenue, east along Investment Boulevard, and south between existing buildings for approximately an additional 1,900 feet into the Eastshore Substation. The new 115-kV line will run contiguously with the existing 12-kV distribution line for

about 3,600 feet. A new overhead transmission line will be installed in an existing PG&E electric distribution line corridor, which might require widening the existing right-of-way (ROW) and replacing 10 to 12 transmission pole structures with structures designed to accommodate both the existing 12-kV distribution lines and the new 115-kV transmission line. Interconnection at the Eastshore Substation's 115-kV bus is expected to increase local transmission and distribution reliability during peak-demand hours and provide much-needed voltage support for the existing transmission system.

Eastshore will connect with PG&E's natural gas Pipeline 153, which is approximately 200 feet away on the opposite side of Clawiter Road from the Eastshore site. PG&E will interconnect Eastshore by installing a 4.5-inch outside diameter pipeline via an underground bore originating at the Eastshore site, boring under Clawiter Road and the existing Union Pacific Railroad Company (UPRR) ROW, and connecting to PG&E's existing gas line.

Eastshore will use very little water, since engine cooling is accomplished with a closed-loop system. Since there will be no requirement for purified water, a demineralizing system will not be required. Site water usage will be primarily for potable water, largely for personal consumptive and sanitary purposes, and for landscape irrigation, and wash-down cleaning. As a result, site consumption will average approximately 1.0 gpm during periods of plant operation. This is equivalent to the consumption of only 2-3 single family households. These water requirements will be served through an existing connection to the City of Hayward municipal water main in Clawiter Road immediately adjacent to the project site.

Sanitary waste water will be discharged to the Hayward city sewer system via an existing onsite sewer connection. Process waste water or service water that has the potential for contamination will be discharged to a holding tank for testing. Under normal conditions this waste water is expected to meet sewer discharge chemical composition limits and will be subsequently discharged to the sanitary sewer. In the unlikely event that the waste water composition exceeds the allowable sewer discharge limits, it will be conveyed off site by a licensed contractor for treatment and disposal.

1.2.1 Project Objectives

Eastshore's project objectives are described in more detail in the AFC. Eastshore's basic objectives include the following:

- To safely construct and operate a nominal 115.5-MW (net), natural-gas-fired, intermediate/peaking load generating facility.
- Deliver electricity to the PG&E Eastshore Substation at 115 kV without the need for system upgrades.
- To provide voltage support to the regional 230 kV transmission system

1.2.2 Project Site Selection

Eastshore Energy, LLC's, approach to site selection focused on identifying potential sites that satisfy its project objectives and have a low potential for environmental impacts. Eastshore also gave consideration to sites near the PG&E Eastshore Substation and existing

infrastructure (natural gas, water, and sewer). The proposed Eastshore site is consistent with these site selection criteria and was based, in part, on the following key selection criteria:

- Ability to gain site control
- Availability of sufficient land area
- Consistency with the City General Plans and zoning ordinances
- Location in an area appropriate for industrial development and compatible with its surroundings
- Proximity to Eastshore Substation (reducing length of transmission line)
- Proximity to a PG&E gas supply pipeline
- Proximity to water service connection
- The ability, with implementation of reasonable mitigation measures, to have no significant impact on the environment

1.3 Facility Location

The proposed Eastshore site was purchased by the Eastshore Energy, LLC, in 2006. A metal parts stamping facility operated at the site prior to its purchase until mid-2004.

The Eastshore site is located between Depot Road and Diablo Road on the west side of Clawiter Road in the City, in Alameda County, California (Figure 1.3-1). The address is 25101 Clawiter Road, Hayward, California 94545. The Eastshore site is in Section 30, Township 3 South, Range 4 East, Rancho Arroyo de la Alameda, in Alameda County, APN 439-075-180. The Eastshore site will occupy approximately 6.22 acres. An additional 4.65 acres will be available for temporary equipment laydown and construction parking at the Berkeley Farms property, located immediately across Clawiter Road, APN 439-080-010.

The Eastshore site is approximately 14 miles southeast of downtown Oakland. Two major transportation corridors, Interstate (I) 880 and SR-92 serve Hayward. I-880 is oriented northwest-southeast, approximately 1.3 miles from the Eastshore site. SR-92 is oriented east-west, approximately 0.6 mile south of the Eastshore site, and intersects both I-880 and I-580.

There is considerable industrial and commercial development along I-880 and along portions of SR-92 in close proximity to the site. Railroad lines and spurs are located in the area. The predominant land uses in the area are industrial and commercial. To the immediate south of the Eastshore site is a commercial office complex and parking lot. West and east of the site are existing light to medium industrial and commercial facilities. The UPRR corridor forms the northeast corner of the parcel. The eastern edge of the Eastshore site is bordered by Clawiter Road. A chiropractic college and Berkeley Farms' central milk products processing and distribution facility are to the east of the site on Clawiter Road. The proposed temporary construction laydown and parking area is located on the northernmost portion of the Berkeley Farms property.

Parcel numbers and the names of the landowners within 1,000 feet of the plant site and within 500 feet of the linear corridors (including the alternative sewer and transmission line corridors) are included in Appendix 1A.

1.4 Project Schedule

Actual construction would take place over approximately 18 months, from fourth quarter 2007 to second quarter 2009. Plant testing and commercial operations are planned to commence in fourth quarter 2008.

1.5 Project Ownership

The applicant – Eastshore Energy, LLC – is a wholly owned subsidiary of Tierra Energy. Tierra Energy is a fully integrated development, investment, and asset management group of companies focused on the power industry.

Eastshore owns the project site. Eastshore will design, construct, own and operate the proposed 115.5 MW (net) electric generating facility. As is consistent with PG&E practice and CPUC law and regulation, the new natural gas pipeline and electric transmission line will be designed, constructed, owned and operated by PG&E. The existing potable water and sewer line connections onsite are owned by the City. Eastshore will own the dedicated onsite service laterals. The temporary construction and laydown area is owned by Berkeley Farms, Inc., and will be leased by Eastshore for the duration of the construction and commissioning period.

The applicant is a wholesale power producer. Eastshore Energy, LLC, has executed a 20-year power purchase agreement with PG&E for the delivery up to 115.5 MW of electricity for up to 4,000 hours per year.

The initial capital cost for Eastshore is estimated to be approximately \$140 million. The estimated value of materials and supplies that will be purchased locally (within Alameda County) during construction is approximately \$1.9 million.

1.6 Project Alternatives

The CEC conducts its review of alternatives to satisfy the Warren-Alquist Act and the California Environmental Quality Act (CEQA). Appendix B(f)(1) of the CEC guidelines requires a discussion of the range of reasonable alternatives to a proposed project, or to the location of the project, that would feasibly attain most of the basic objectives of the but avoid or substantially lessen significant effects. To enable this review, the criteria and objectives that led to the selection of the Eastshore site and design features are provided in the AFC, along with a detailed discussion of the range of alternatives considered (Section 9.0).

A No Project Alternative was considered and rejected as inconsistent with the Eastshore's objectives, which include the need to develop additional reliable generation sources. In addition, the No Project Alternative could result in greater fuel consumption and air pollution in the state because generation from older, less-efficient plants with higher air

emissions would not be replaced by generation from cleaner, more-efficient plants, such as Eastshore.

Possible alternative sites in the general vicinity of the proposed site were reviewed and found to be no more acceptable than the Eastshore site. Alternative routes for the natural gas line, sewer connection, and potable water lines were not developed because these connections are either located onsite or are short and direct.

The following interconnection options were considered:

- The proposed route, traveling south along Clawiter Road, crossing over SR-92, turning west on Eden Landing Road, south along Production Boulevard, east along Investment Boulevard, and north between existing buildings to enter the Eastshore Substation at its eastern boundary
- An alternate route following the UPRR corridor south crossing SR 92 and turning west to enter the Eastshore Substation from the east,
- An alternate route traveling south along Clawiter Road, then turning west on Enterprise Avenue and tapping into the existing Grant-Eastshore 115 kV transmission line

Each alternative is free of significant impacts, but the proposed route has significant comparative advantages because it would avoid difficult UPRR right-of-way acquisitions and would minimize impacts to the existing 115 kV transmission system.

Several alternative generating technologies were reviewed. Eastshore presented both simple cycle aero-derivative gas turbine technology and spark-ignited reciprocating engine technology in response to PG&E's RFO. After reviewing both proposals PG&E selected the natural gas-fired, spark-ignited reciprocating engine arrangement for Eastshore. Other alternative technologies addressed in the Section 9.0 Alternatives include conventional oil- and natural gas-fired plants, biomass-fired plants, waste-to-energy plants, solar plants, wind-generation plants, and others. None of these technologies are feasible alternatives to the reciprocating engine technology selected for Eastshore. More complete discussions of alternatives are presented in Sections 9.0 and 5.3 (for transmission alternatives).

1.7 Environmental Considerations

Sixteen areas of possible environmental impact from the proposed project were investigated. Detailed descriptions and analyses of these areas are presented in Sections 8.1 through 8.16 of the AFC and summarized briefly in this section. With the implementation of reasonable and feasible mitigation measures, there will be no significant environmental effects.

1.7.1 Air Quality

The Eastshore site is located in an area designated as attainment for state and federal nitrogen dioxide (NO₂), CO, and sulfur dioxide (SO₂) ambient air quality standards. The area is currently designated as nonattainment for ozone and fine particulate matter (PM₁₀ and PM_{2.5}).

An assessment of the impact to air quality was performed using detailed air dispersion modeling. Potential air quality impacts from Eastshore will be mitigated by the state-of-the-art combustion and post-combustion emission control technologies summarized in Table 1.7-1 that will comply with the Bay Area Air Quality Management District BACT requirements.

TABLE 1.7-1
Summary of Proposed Air Pollution Control Technology

Pollutant	Proposed BACT	Emission Concentration ppm by volume at 15% O ₂
NO _x	Lean Burn Combustion, Selective Catalytic Reduction	5
POC	Lean Burn Combustion, Oxidation Catalyst	25
CO	Lean Burn Combustion, Oxidation Catalyst	13
SO ₂	PUC-regulated Natural Gas	<0.153 grains per 100 scf sulfur in natural gas
PM ₁₀ /PM _{2.5}	Lean Burn Combustion	2.426 lb/hr

Emission reduction credits will be obtained to offset increases in emissions of nonattainment pollutants or their precursors, including POC and NO₂. Any SO₂ and PM₁₀/PM_{2.5} emissions that could create a significant adverse impact will be mitigated consistent with CEC practice and CEQA requirements to reduce these impacts to less than significant levels. With the use of advanced lean-burn combustion control technology, post-combustion pollution control systems, and emission offsets, Eastshore will cause no significant adverse air quality impacts.

1.7.2 Biological Resources

The Eastshore site is located in an industrial area of Alameda County. Preliminary surveys, habitat evaluations, and aerial photographs indicate that the site is not located in a sensitive area. Land uses within 1 mile of Eastshore are largely industrial, with some commercial and residential. The highly developed nature of the Eastshore vicinity would not support most special-status species except a few plant species, other transient uses by migratory birds, and mammals.

Because the area around the Eastshore site is highly developed, no direct impacts to sensitive biological resources are expected to occur from construction. Impacts during operation are expected to be less than significant. Therefore, no significant impacts to biological resources are expected.

1.7.3 Cultural Resources

A survey of the proposed Eastshore site and appurtenant linear facilities was conducted. The surveyed area is located in a heavily industrial and commercial area. The Eastshore site was previously covered by asphalt, buildings and parking areas. The linear natural gas supply and 115-kV transmission line routes are contained entirely in existing disturbed city streets, asphalted parking areas, or previously disturbed areas. No undisturbed ground or vegetation was visible within the Eastshore site or transmission line route during the survey.

Given the amount of previous ground disturbance in the area for buildings, utilities, and other infrastructure, it is likely that resources in the area would have been disturbed or destroyed. The archaeological sensitivity of the Eastshore site and linear facility routes is considered low.

The gas, sanitary sewer, and potable water, and transmission lines will be constructed entirely in previously disturbed areas, and entirely in the existing disturbed city streets. Further, both the CHRIS literature search and CH2M HILL's survey failed to identify significant archaeological sites. There are no historic architectural resources within 0.5 mile of the Eastshore site and 0.25 mile of the linear features. No impacts on architectural resources are expected to occur from construction and operation of Eastshore.

Although significant archaeological and historic archeological sites were not found during the field survey, subsurface construction could encounter buried archaeological remains. For this reason, Eastshore Energy, LLC, proposes to implement measures to mitigate potential adverse impacts that could occur if there were an unexpected discovery of buried culturally or historically significant resources.

1.7.4 Land Use

The Eastshore site is located in the City and is subject to policies stipulated in Hayward General Plan. Specifically, the land use element of the general plan defines planning areas and establishes the descriptions, limits, and directions for growth. All Eastshore components are in the City, are designated as Industrial Corridor under the general plan, and are zoned for industrial use. Eastshore will comply with the zoning ordinance land use designation and the General Plan policies for the City.

The Eastshore site is immediately west of the UPRR tracks at the western edge of Hayward Area Shoreline Planning Agency jurisdiction, and more than 1 mile from the lands considered to be San Francisco Bay shoreline. Eastshore is consistent with the relevant key Hayward Area Shoreline Planning Agency objective of promoting industrial infill development in designated industrial areas.

The proposed electric transmission line route from the switchyard to the PG&E Eastshore Substation is designated and zoned for industrial use. The areas covered by the natural gas, water, and sewer lines are all designated in the general plan and zoning ordinance as industrial use.

Eastshore would be constructed in an existing industrial area and compatible with adjacent land uses. The transmission line would be installed in an industrial area in the City, and would be compatible with adjacent land uses. It is anticipated that Eastshore would not

contribute to a significant impact to land use in the project vicinity. Therefore, Eastshore, as proposed, would not result in a significant cumulative land use impact.

1.7.5 Noise

Eastshore, as proposed, will produce noticeable noise during operations, but the noise levels will comply with City's requirements for industrial and residential uses. Noise will also be produced at the Eastshore site during construction.

The closest residential receptor to the Eastshore site is located at 2765 Depot Road, approximately 1,100 feet away. Adjacent parcels are industrial or commercial in nature.

Construction will occur during an 18-month period. General construction noise levels projected at 1,500 feet from the Eastshore site are estimated to be between 48 and 59 decibels, A-weighted (dBA). These results are conservative because the only attenuating mechanism considered was divergence of the sound waves in open air. Shielding effects of intervening structures were not included in the calculations. Construction noise might be audible at the nearest residences, but is not anticipated to exceed current exposure levels, and the noisiest construction activities will be confined to the daytime hours.

Ambient noise measurements determined that the noise level that is exceeded during 90 percent of the measurement period (L_{90}) nighttime noise level at the nearest residence (i.e., sensitive receptor) is 45 dBA. Noise modeling was used to determine the contribution to the nighttime ambient levels Eastshore would make during operation. Noise from operations is predicted not to exceed 50 dBA at the closest residential receptor. This is consistent with CEC's 5-dBA-over-background significance criterion and complies with the City criterion of 3 dBA above the existing L_{dn} . Ground and airborne vibration are not expected to be perceptible offsite.

No significant noise impacts are expected from construction and operation of Eastshore.

1.7.6 Public Health

Potential impacts associated with emissions of chemical substances of potential concern into the air from Eastshore are addressed in a health risk assessment. Health risks potentially associated with the estimated concentrations of chemical substances in ambient air were characterized in terms of excess lifetime cancer risks (for substances listed by the California Office of Environmental Health and Hazard Assessment [OEHHA] as cancer causing) or comparison with reference exposure levels for non-cancer health effects (for substances listed by the California Office of Environmental Health and Hazard Assessment as non-cancer causing).

The maximum exposed individual resident excess lifetime cancer risk was estimated to be 8.5 in 1 million, less than the 10 in 1 million significance threshold above which public health impacts require additional emission controls.

No significant public health impacts are expected from the construction and operation of Eastshore.

1.7.7 Worker Health and Safety

During construction, workers will be exposed to construction hazards, and during plant operation, operators will be exposed to operation safety hazards. To evaluate these hazards and control measures, a hazard analysis was performed. The analysis identifies the hazards anticipated during construction and operation, and indicates which safety programs should be developed and implemented to mitigate and appropriately manage those hazards. Programs are overall plans that set forth the method or methods that will be followed to achieve particular health and safety objectives. For example, the Fire Protection and Prevention Program will describe procedures to protect against and prevent fires. Each program or plan will contain training requirements that are translated into detailed training courses. Upon completion of construction and commencement of operations at Eastshore, the construction health and safety program will transition into an operations-oriented program that reflects safety hazards and necessary controls during operation. As a consequence of the development and implementation of these plans and programs, workplace accidents would be minimized in both severity and frequency so that there would not be a significant impact to worker health and safety from the construction and operation of Eastshore.

1.7.8 Socioeconomics

Total construction personnel requirements for Eastshore and the linear facilities will be an average of 125 workers per month for 18 months, with a peak total work force of 235 during month 12. This translates into 2,246 person-months. The construction payroll is estimated at \$33.8 million. The estimated indirect and induced employment within Alameda County would be 17 and 90 jobs, respectively. Indirect and induced income impacts are estimated at \$733,300 and \$3,828,200, respectively. The total local sales tax expected to be generated during construction is \$166,250 (i.e., 8.75 percent of local sales). During construction, there would be no significant adverse impacts to population, housing, schools, or public services and utilities.

Eastshore will be operated by 13 full-time employees. Estimated indirect and induced employment in Alameda County would be 4 and 7 permanent jobs, respectively. Eastshore will bring \$2,366,100 in operational payroll to the region. During operations, additional sales tax revenues of approximately \$116,480 will be obtained by the City and Alameda County. During operation, there would be no significant adverse impacts to population, housing, schools, or public services and utilities. Therefore, Eastshore would benefit the local economy.

Potential environmental justice impacts were also analyzed in accordance with Executive Order (EO) 12898 (Appendix 8.8A). As reported in the series of environmental analyses prepared for Eastshore, and further confirmed through discussions with the environmental professionals who prepared those sections, no significant adverse impacts are expected after proposed mitigation measures are implemented. Consequently, none of the impacts of Eastshore can be described as high and adverse in the context of EO 12898. Because no high and adverse impacts are expected to result from the construction and operation of Eastshore, no high and adverse human health or environmental effects of Eastshore are expected to fall disproportionately on minority or low-income populations. Eastshore can, therefore, be considered consistent with the policy established in EO 12898.

1.7.9 Agriculture and Soils

Based on review of aerial photographs and documentation from a nearby project (Calpine/Bechtel, 2001), there are no commercial agricultural land uses in the proposed Eastshore site (includes a 1-mile buffer of all facilities). There are no important farmlands (as defined for the Farmland Mapping and Monitoring Program) mapped in the same area (CDC, 2004). The proposed gas and electrical corridors will follow existing roadway or railroad ROW through urban areas. The potable water supply and sanitary sewer pipeline connection already exist on the Eastshore site.

The soils found in the Eastshore site, laydown area, and along the linear features are nearly level (or very slightly sloped). Construction activities could affect soil resources by increasing soil erosion and soil compaction. However, best management practices will be used to minimize erosion at the site during construction. Therefore, Eastshore will not cause adverse impacts to agricultural production or soil loss.

1.7.10 Traffic and Transportation

During the peak construction period, approximately 212 daily construction worker round trips are expected. To analyze the worst-case scenario, a focused assessment of the impacts on the surrounding roadways – an Intersection Capacity Utilization analysis – was conducted for the seven intersections that would be most directly affected by Eastshore construction traffic. In general, the addition of the forecasted peak project traffic (424 daily vehicles) is not anticipated to result in a significant change to roadway operations throughout the day. Therefore, the construction of Eastshore is not expected to have significant impacts on roadway intersections.

Three segments are predicted to have unacceptable LOS E and LOS F operations during the peak hour: I-880 between Winton Avenue and SR-92, I-880 between SR-92 and Tennyson Road, and Clawiter Road between Industrial Boulevard and SR-92 westbound ramps. Because these roadways are over capacity, anything that adds a significant number of trips may be considered an impact. The assumed worst-case overlap of construction of the nearby Russell City Energy Center would further exacerbate this impact.

To mitigate the potential impacts, a traffic control plan will be prepared in accordance with the California Department of Transportation Manual on Uniform Traffic Control Devices and Work Area Traffic Control Handbook. After construction is complete, no permanent alterations to the area roadways are proposed. Implementation of a traffic control plan for the affected area for the short duration of construction in that area is adequate to minimize the traffic impacts to an acceptable level. Therefore, with the implementation of a traffic control plan, the construction of Eastshore is not expected to have significant impacts on roadway intersections.

The addition of traffic associated with Eastshore operations during the peak commuter morning and afternoon hours will not result in an Intersection Capacity Utilization value significantly higher than without Eastshore. Therefore, the operation of Eastshore will not have significant impacts on roadway intersections.

1.7.11 Visual Resources

The landscape surrounding the Eastshore site is composed almost exclusively of industrial and commercial facilities. The site is flat and open, and contains no features considered to be scenic resources. Several industrial and commercial facilities throughout the area are tall rectangular buildings that generally block views toward the Eastshore site. Eastshore features will include a power house (including control room) that will be approximately 417 feet long, 71 feet wide and 36 feet high. The engine stacks will be 70 feet tall and 4 feet in diameter. There will be two radiator banks on the northern portion of the Eastshore site. Each bank will be approximately 185 feet long, 33 feet wide, and 20 feet high to the top of the fan shrouds. The exteriors of all major equipment will be the shades of off-white, beige, tan, and gray used on the adjacent buildings. This color treatment will optimize Eastshore's visual integration with the surrounding environment.

There are no residences in close proximity to the Eastshore site. The nearest residence is approximately 1,100 feet away on Depot Road. The nearest residential neighborhood is approximately 0.6 mile away, east of Industrial Boulevard. A key observation point (KOP1) toward the site was selected in consultation with CEC Visual Resources staff and evaluated. A computer simulation determined that Eastshore would not be visible from this view and, therefore, would have no impact on the overall quality of the view. In general, to the extent to which they would be visible, the elements of Eastshore would be consistent with the existing components of the view. They would have very little effect on the character of the views, and would not alter the view's existing low level of visual quality. The lighting associated with Eastshore would be limited, and would not pose a hazard or adversely affect day- or nighttime views toward the site. Eastshore is in general conformance with the LORS related to visual resources in the City plans and zoning ordinance provisions that pertain to this area. Therefore, Eastshore will not cause any significant impacts to visual resources.

1.7.12 Hazardous Materials Handling

Hazardous materials to be used during construction and operation were evaluated for hazard characteristics. Hazardous materials to be used during construction of Eastshore (and its associated linear facilities) will include gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. The quantities of hazardous materials that will be onsite during construction will be small, relative to the quantities used during operation. Several hazardous materials, including one regulated substance, will be stored at Eastshore during operation. Only aqueous ammonia will be stored in amounts above the threshold quantity during the operations phase, and a risk management plan will be prepared that is consistent with the California's Accidental Release Prevention Program requirements. Sufficient monitoring will be performed during construction and operation to ensure that the proposed mitigation measures are satisfied and effective in mitigating potential environmental effects.

An offsite consequence analysis will be performed to assess the impact to humans if a spill or rupture of the aqueous ammonia storage tank were to occur. The results of this analysis will be compiled and submitted during discovery. Based on prior experience with similar facilities, the general public is not expected to be exposed to ammonia concentrations above levels considered to represent a significant impact during a worst-case release scenario.

Eastshore will confirm that the facility will not pose a significant risk to the public during discovery.

1.7.13 Waste Management

During construction, the primary waste generated will be solid nonhazardous waste. However, some nonhazardous liquid waste and hazardous waste (solid and liquid) will also be generated. Most of the hazardous wastes will be generated at the Eastshore site, but a limited quantity of hazardous waste may be generated during construction of the Eastshore linears. The types of waste and their estimated quantities are described in the waste management section of the AFC. The primary waste generated during operation will be nonhazardous wastewater. Other nonhazardous solid waste will also be generated, as well as varying quantities of liquid and solid hazardous waste. Handling and mitigation of these wastes is also described in the waste management section of the AFC.

The handling and management of waste generated by Eastshore will follow the hierarchical approach of source reduction, recycling, treatment, and disposal. The first priority will be to reduce the quantity of waste generated through pollution prevention methods (e.g., high-efficiency cleaning methods). The next level of waste management will involve the reuse or recycling of wastes (e.g., used oil recycling). For wastes that cannot be recycled, treatment will be used, if possible, to make the waste nonhazardous (e.g., neutralization). Residual wastes that cannot be reused, recycled, or treated will be disposed of offsite.

1.7.14 Water Resources

Eastshore will use an extremely small quantity of water, approximately 1.6 acre-feet of potable water per year. This water consumption is comparable to only 2 – 3 single family households. Potable water will be supplied to the site by the City. Potable water uses at Eastshore will include maintenance (fire fighting systems and engine closed-loop cooling); service (turbo washing, power house and plant uses, and personnel uses); and miscellaneous uses, such as equipment washing and irrigation. Wastewater, also in very small quantities, will be collected and discharged to the City sanitary sewer.

Proposed mitigation measures are prescribed by stormwater and erosion control management programs mandated under the National Pollutant Discharge Elimination System (NPDES). These programs have been in place for a number of years and the prescribed measures have proven effective. Under the General NPDES Permit for Construction, for example, various specific measures are prescribed, and a program of monitoring is required. Compliance with these programs will ensure that all residual impacts associated with Eastshore are mitigated to a level of less than significant.

1.7.15 Geologic Hazards and Resources

Five principal faults lie within a 25-mile radius of the Eastshore site. Ground shaking presents the most significant geologic hazard to Eastshore and its linear facilities. Liquefaction might also affect linear facilities as a result of ground shaking. Eastshore and the linear facilities will need to be designed and constructed to withstand strong earthquake shaking as specified in the 2001 California Building Code for Seismic Zone 4 in accordance with City requirements. Proposed mitigation measures will be implemented in the design of the facilities to reduce risk associated with these hazards.

1.7.16 Paleontological Resources

Paleontological resources (fossils) are the remains or traces of prehistoric animals and plants. The literature review, archival searches, and field survey conducted for this inventory documented only three previously recorded fossil sites within 3 to 5 miles of the Eastshore site. The occurrence of fossils near the Eastshore site in similar geologic environments indicates a potential for additional similar, scientifically important fossil remains to be encountered by earth-moving activities during construction. The Eastshore site lies on alluvial deposits that are at least in part equivalent to the Temescal Formation. The potential of encountering sediments of high paleontological sensitivity is likely when these activities extend to a depth sufficient to encounter undisturbed sediment of Rancholabrean age. Although excavation at the site will generally be shallow (less than 6 feet below ground surface), the possibility exists that disturbance would uncover resources of high paleontological sensitivity.

Mitigation measures have been proposed to reduce or mitigate potential project-related adverse impacts to significant paleontological resources. These mitigation measures are described in the paleontological resources section of the AFC. No impact to paleontological resources would occur as a consequence of operation, so no mitigation is proposed during operation of Eastshore.

1.8 Key Benefits

1.8.1 Environmental

Eastshore will employ advanced, high-efficiency reciprocating engine technology along with selective catalytic reduction units and oxidation catalysts to reduce emissions. Using natural gas for fuel, Eastshore will be among the cleanest facilities of comparable size in the nation. Eastshore emissions will be lower than those for existing older generating facilities. Eastshore will also obtain emission offsets to compensate for its air emissions. Eastshore will use a minimum amount of freshwater. And because Eastshore will use closed-loop radiators for heat rejection, there will be no visible water vapor plumes.

1.8.2 Employment

Eastshore will provide a peak of approximately 235 construction jobs, with an average of approximately 125 construction jobs, over the 18-month construction period. In addition, Eastshore will provide approximately 13 full-time, living-wage jobs throughout its life. The estimated indirect and induced employment in Alameda County would be 17 and 90 jobs, respectively.

1.8.3 Tax Revenues

The total local sales tax expected to be generated during construction is \$166,250. During operations, additional sales tax revenues of approximately \$116,480 will be obtained by the City and Alameda County.

1.8.4 Transmission Voltage Support

Eastshore will provide much-needed voltage support for the regional 230-kV electric transmission system. This support will increase the efficiency of the 230-kV system.

1.8.5 Plant Efficiency and Operating Flexibility

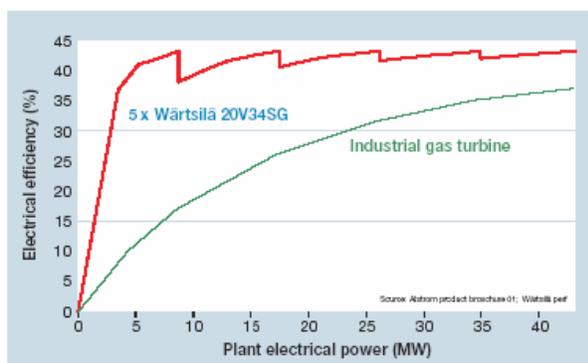
One, multiple or all units can be operated at one time or in any combination (e.g., cascading) at various power levels to maximize plant efficiency near the plant's most efficient heat rate of less than 8,800 BTU/kWh (HHV). The Wartsila 34SG unit ranks as the most efficient of the spark-ignited gas engines today, having an electrical efficiency near 45% (LHV). See the chart below for "Cascading" and efficiency data.

1.8.6 Reliable and Technologically Mature System Design

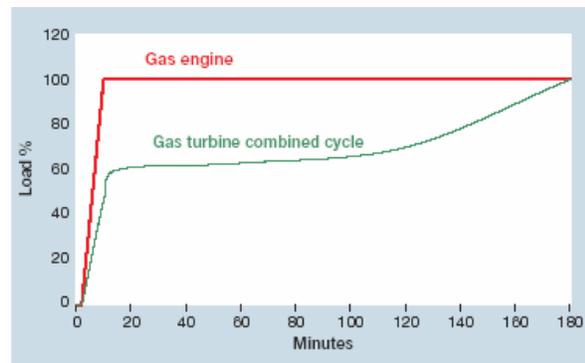
Wartsila has been designing, manufacturing and installing reciprocating engines world-wide since 1942. Since year 2000, 222 34SG engines have been installed in power plants representing over 1400 MW of power. The plant is designed using modules and each engine runs in parallel to the others - offering redundancy and allowing each to be taken offline for maintenance while allowing the remaining units to operate. The engines are also designed to operate over a wide temperature range and have excellent durability and minimal effect from thermal fatigue. No derating of plant capacity will occur at temperatures between 32 and 100F.

1.8.7 Rapid Start-up Capability

Flexibility is also provided by way of the ability of each engine or the Plant to start and come to full load within 10 minutes. This quick ramp rate allows all engines to be available for spinning and non-spinning reserves to support PG&E's capacity needs. See the chart below for "10 minute ramping comparison."



The multi-unit gas engine power plant has very high part-load efficiency.

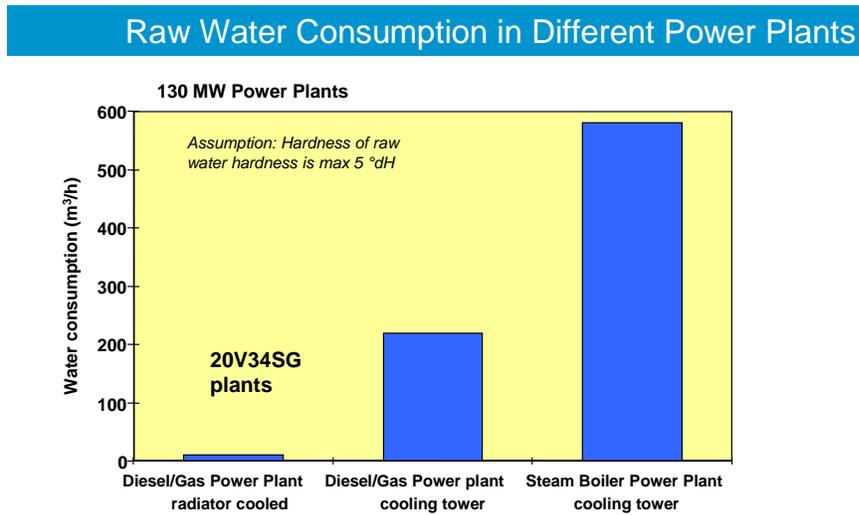


Start-up and loading of a gas engine power plant compared to a gas turbine combined cycle.

1.8.8 Minimal Water Usage

The Wartsila 20V34SG plant is designed using a closed-loop water cooling system resulting in the plant having negligible water consumption (e.g., 1 gpm at full load operations). Compared to combustion turbine technology, no water is used for energy enhancement or NO_x control. The chart below shows a comparison of water consumption for different power plants types, and the block diagram below shows anticipated water demands and

waste streams for this plant. The Chart below provides water use comparison for various plant types.



1.9 Persons Who Prepared the AFC

Persons with primary responsibility for the preparation of each section of the AFC are listed in Appendix 1B.

1.10 Laws, Ordinances, Regulations, and Standards

Each section of the AFC addresses the relevant LORS and compliance with them. For convenience, a summary LORS table is provided in Appendix 1C.

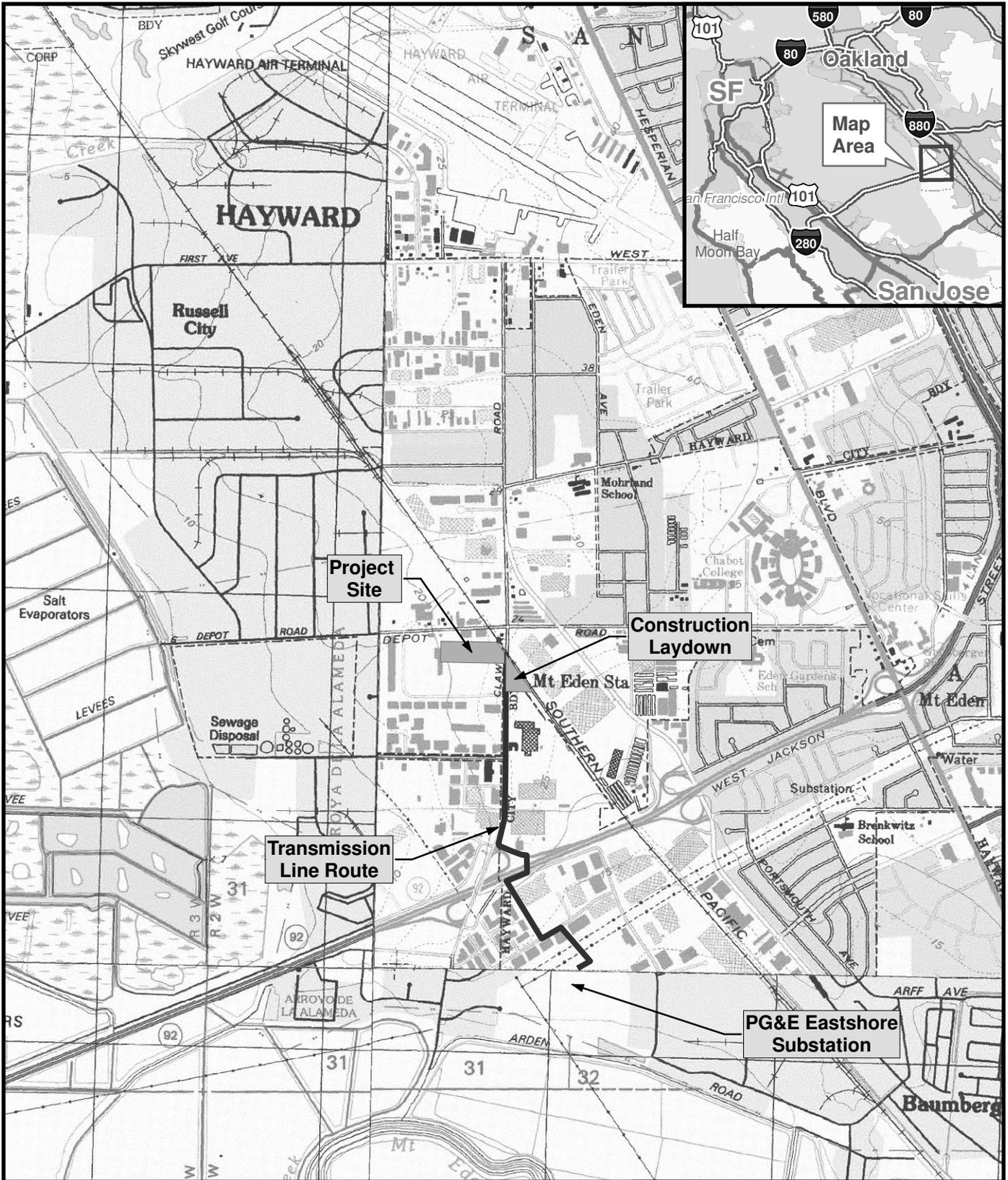
1.11 Permitting Requirements

Each section provides a list of applicable federal, state, and local permits that would be required by each jurisdiction for Eastshore. For convenience, a table summarizing those permits is provided in Appendix 1D, and an agency contact list for each section is provided in Appendix 1E.

1.12 Applicant Contacts and Proof of Service List

The following AFC contacts and proof of service list should be used for the Applicant (with project roles noted in parentheses):

Greg Trewitt Vice President (Applicant)	Tierra Energy, Inc 710 S. Pearl Street, Suite A Denver, Colorado 80209 303.722.0450 greg.trewitt@tierraenergy.com
Harry Rubin Executive Vice President (Development Manager)	RAMCO Generating Two 1769 Orvietto Drive, Roseville, CA 95661 916 780 9222 hmrenergy@msn.com
Theodore Matula Vice President and General Counsel (Corporate Counsel)	Tierra Energy 7000 North Mopac, Suite 475 Austin, Texas 78731 512.480.9119 theodore.matula@tierraenergy.com
David A. Stein, PE Vice President (AFC Project Manager)	CH2M HILL 155 Grand Avenue, Suite 1000 Oakland, CA 94612 510.587.7787 dstein@ch2m.com
Jennifer Scholl Senior Program Manager (AFC Assistant Project Manager)	CH2M HILL 610 Anacapa Street Suite B5 Santa Barbara, CA 93101 805.568.0650 jscholl@ch2m.com
Jane Luckhardt Partner (AFC Counsel)	Downey Brand Attorneys LLP 555 Capitol Mall, 10th Floor Sacramento, California 95814 916.444.1000 jluckhardt@downeybrand.com



LEGEND

-  Site Location
-  Transmission Line Route

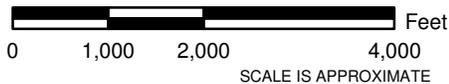


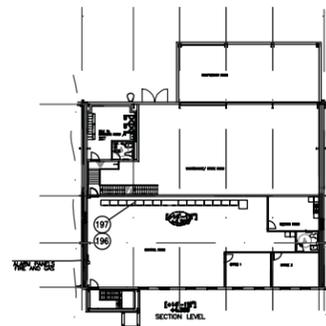
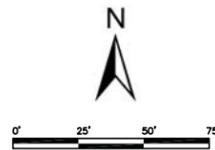
FIGURE 1.2-1
PROJECT LOCATION
 EASTSHORE ENERGY CENTER
 HAYWARD, CALIFORNIA



FIGURE 1.2-2A
EXISTING SITE CONDITIONS
EASTSHORE ENERGY CENTER
HAYWARD, CALIFORNIA



FIGURE 1.2-2B
ARTIST RENDERING OF EASTSHORE ENERGY CENTER
EASTSHORE ENERGY CENTER
HAYWARD, CALIFORNIA



BUILDING SECOND FLOOR PLAN

ENGINE HALL & UTILITY BLOCK						MECHANICAL UTILITY AREA									
ITEM NO	PCS.	CODE (FIRST)	DESCRIPTION	WEIGHT INCL. LIQUIDS KG	WEIGHT INCL. LIQUIDS LB	MOUNTING LEVEL MILLIM.	(FLR LEVEL) INCH.	ITEM NO	PCS.	CODE (FIRST)	DESCRIPTION	WEIGHT INCL. LIQUIDS KG	WEIGHT INCL. LIQUIDS LBS	MOUNTING LEVEL MILLIM.	INCH.
1	14	SQA	ENGINE GENERATOR SET	134700	296962	+0.000	0'-0"	71	42	-	RADIATORS LOW-NOISE RADIATORS	-	-	-	-
4	14	QEA	AUXILIARY MODULE	4200	9259	+0.000	0'-0"	90	14	NHA	EXHAUST GAS SILENCER	5200	11454	+5.560	+22'-5"
37	14	ZBB	GAS REGULATING UNIT	200	440	+0.000	0'-0"	94	34	NGA	RUPTURE DISC	-	-	-	-
60	2	TCA	WORKING AIR UNIT	670	1477	+0.000	0'-0"	103	14	-	DENOX (SCR)	14000	30864	+5.560	+22'-5"
62	2	TSA	STARTING AIR UNIT	710	1565	+0.000	0'-0"	170	1	-	RAW WATER TANK 35,000 GAL	-	-	-	-
63	4	TSB	STARTING AIR BOTTLE 9 AM3/2500 GAL	4335	9555	+0.000	0'-0"	172	1	-	FIRE FIGHTING CONTAINER	-	-	-	-
70	2	VBA	MAINTENANCE WATER TANK 4M3/1060GAL	4940	10890	+0.000	0'-0"	181	2	AET	STEP-UP TRANSFORMER	-	-	-	-
72	14	VEA	EXPANSION VESSEL 600L/160GAL	775	1708	+4.940	16'-2"	-	-	-	-	-	-	-	-
80	14	NGA	CHARGE AIR FILTER	960	2116	+3.100	10'-2"	-	-	-	-	-	-	-	-
82	14	-	CHARGE AIR & EXHAUST GAS MODULE	3000	6613	+3.240	11'-2"	-	-	-	-	-	-	-	-
93	14	NHA	EXHAUST GAS VENTILATION UNIT	55	121	+4.940	16'-2"	-	-	-	-	-	-	-	-
104	14	SEN	DOSING BOX	-	-	+0.000	0'-0"	-	-	-	-	-	-	-	-
108	14	SNC	NOX CONTROLLER	-	-	+0.000	0'-0"	-	-	-	-	-	-	-	-
182	18	-	MV SWITCHGEAR	-	-	+0.000	0'-0"	-	-	-	-	-	-	-	-
183	14	BAN	NEUTRAL GROUNDING RESISTOR	-	-	+0.000	0'-0"	-	-	-	-	-	-	-	-
185	-	BEY	DC-SYSTEM	-	-	+0.000	0'-0"	-	-	-	-	-	-	-	-
186	-	BFA	LV SWITCHGEAR	-	-	+0.000	0'-0"	-	-	-	-	-	-	-	-
189	2	BFP	STATION SERVICE TRANSFORMER	-	-	+0.000	0'-0"	40	1	QAA	LO UNLOADING PUMP UNIT (CLEAN)	-	-	-	-
196	4	CFA	CONTROL PANEL COMMON	-	-	+0.000	0'-0"	42	1	QAC	CLEAN LO TANK 55M3/14531GAL	-	-	-	-
197	14	CFC	CONTROL PANEL ENGINE WISE	-	-	+0.000	0'-0"	43	2	QAD	USED/SERVICE LO TANK 13M3/3434GAL	-	-	-	-
210	14	-	VENTILATION UNIT (ENGINEHALL)	2000	4409	+0.000	0'-0"	44	2	QAE	LO TRANSFER PUMP UNIT	-	-	-	-
215	14	-	FREQUENCY CONVERTER	-	-	-	-	105	2	-	SCR REGENT TANK 10,000 GAL	-	-	-	-
230	-	-	225 KW BLACK START GEN.SET	-	-	-	-	145	1	QDB	DIRTY WATER HOLDING TANK 20M3/5284 GAL	-	-	-	-

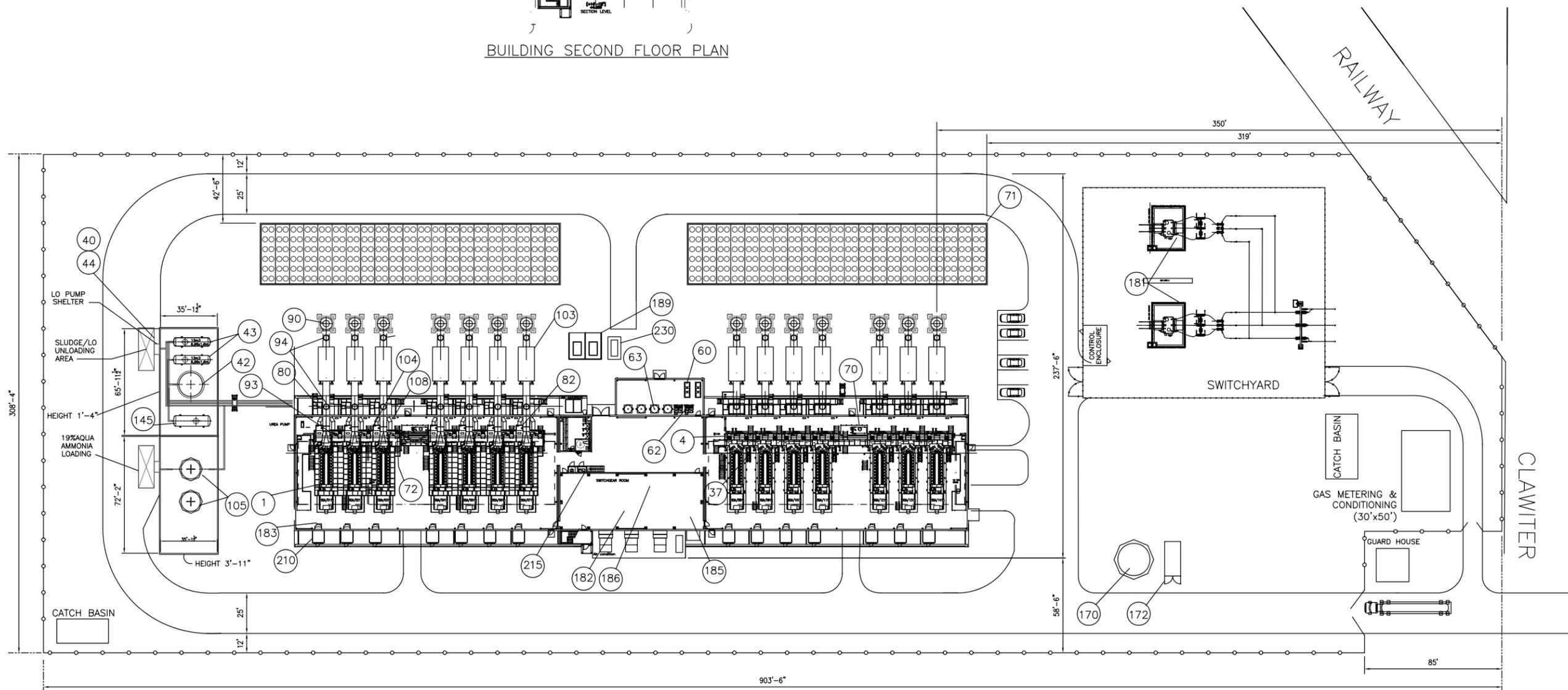
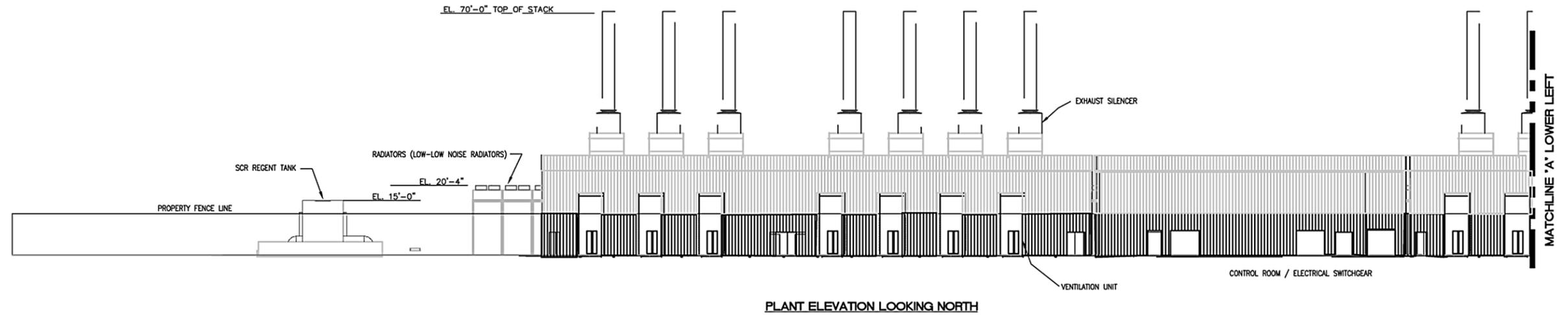


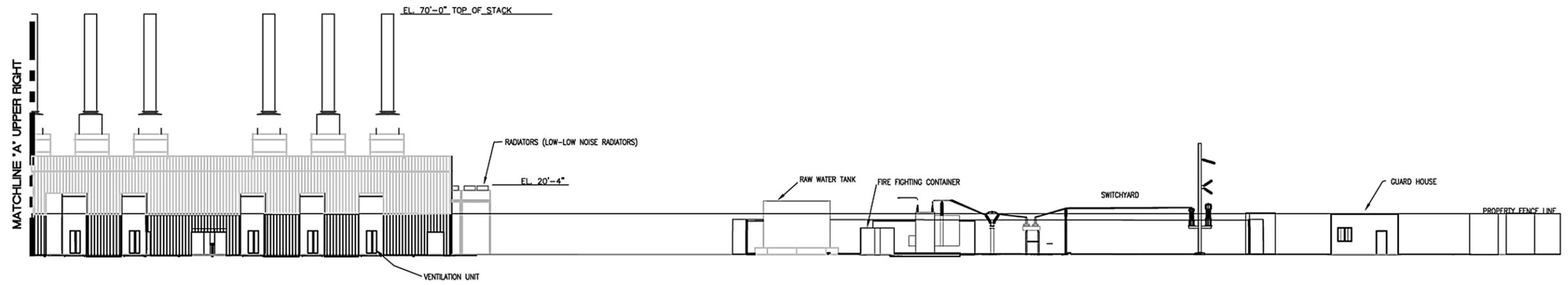
FIGURE 1.2-3
SITE GENERAL ARRANGEMENT
 EASTSHORE ENERGY CENTER
 HAYWARD, CALIFORNIA
 ALAMEDA COUNTY



1" = 12'-0"
 0' 12'-0" 25' 37'-0"



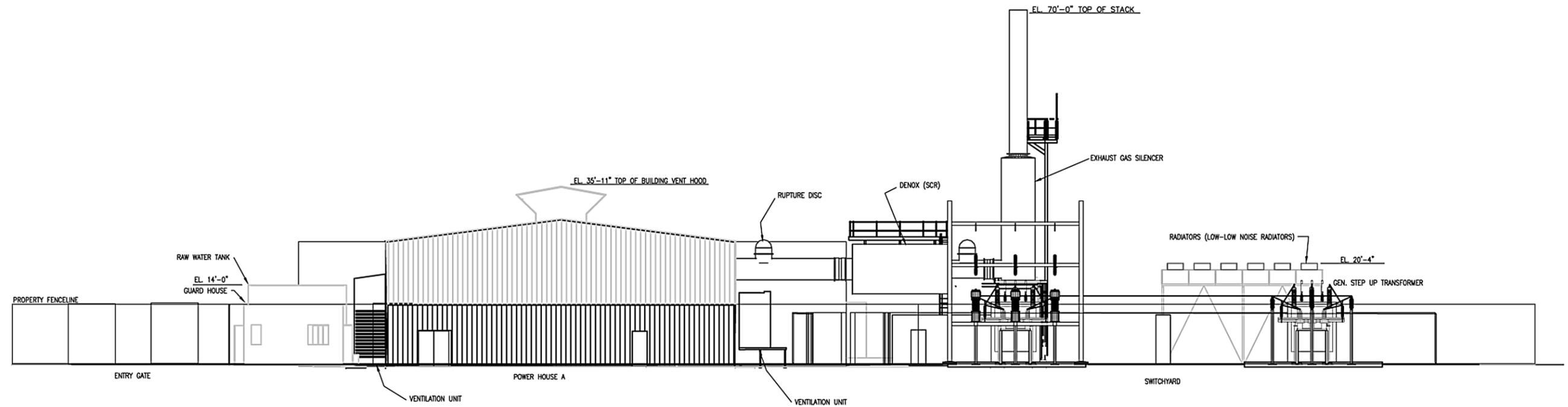
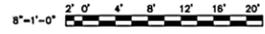
PLANT ELEVATION LOOKING NORTH



PLANT ELEVATION LOOKING NORTH - CONTINUE

FIGURE 1.2-4A
SITE ELEVATION DRAWING -
VIEW LOOKING NORTH
 EASTSHORE ENERGY CENTER
 HAYWARD, CALIFORNIA
 ALAMEDA COUNTY





PLANT ELEVATION LOOKING WEST

FIGURE 1.2-4B
SITE ELEVATION DRAWING -
VIEW LOOKING WEST
 EASTSHORE ENERGY CENTER
 HAYWARD, CALIFORNIA
 ALAMEDA COUNTY

