SECTION 9.0

Alternatives

9.1 Introduction

The California Environmental Quality Act (CEQA) requires consideration of "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives" [14 CCR. 15126.6(a)]. Thus, the focus of an alternatives analysis should be on alternatives that "could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects" [14 CCR 15126.6(c)]. The CEQA Guidelines further provide that "[a]mong the factors that may be used to eliminate alternatives from detailed consideration in an Environmental Impact Report (EIR) are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts" (*Id*.).

A range of reasonable alternatives that could feasibly attain most of the basic objectives of the proposed Vernon Power Plant (VPP) are identified and evaluated in this section including the "No Project" alternative (that is, not developing a new power generation facility), alternative site locations for constructing and operating VPP, alternatives to the linear facilities (electric, natural gas, and water and wastewater), alternative combined-cycle configurations to the combustion turbine and steam turbine arrangement currently proposed for VPP, and alternative power generation technologies.

9.2 No Project Alternative

9.2.1 Description

If the No Project alternative is selected, the City of Vernon (City or Vernon) would not receive authorization to construct and operate a new power generation facility. As a result, the proposed facility site would not be developed and would potentially be used for some other development, consistent with the zoning. Energy that would have been produced by the proposed facility would need to be generated by another source and imported to southern California. Common available sources include older power generation facilities that operate less efficiently and release larger quantities of air pollutants than the proposed facility.

The purpose of a power plant, such as VPP, is to generate and provide electric power to the City's customers and Southern California electrical users. To generate and sell power in today's market, generating facilities need to be operated in a cost-effective manner and produce power at a cost that is acceptable to end users. With VPP, since the City will be developing the plant to provide more power than it currently needs, it will incur financial risks of the project's success or failure.

The No Project alternative is not considered feasible because it does not meet the City's plans for the development of new power generation facilities to boost local power generation and reliability, reduce dependence on imported power, provide generation reserves, or the general objective of replacing existing, less efficient generation facilities.

9.2.2 Potential Environmental Impacts

VPP will produce electricity for the City's service area and Southern California market while consuming less fuel and discharging fewer air emissions for each energy unit generated when compared to other existing, older fossil fuel generation facilities. This is a beneficial environmental impact.

Potential environmental impacts from the No Project alternative would result in greater fuel consumption and air pollution because new power plants, including VPP, would not be brought into operation to displace production from older, less efficient plants that have higher air emissions. An analysis of the environmental impacts from the No Project alternative is provided below in Subsection 9.3.2.3.

9.3 Proposed and Alternative Sites

9.3.1 Proposed Site

VPP will be located on approximately 13.7 acres of land at the southeast corner of a Fruitland and Boyle avenues. The site is located in an industrial area in the City of Vernon, in Los Angeles County, and industrial uses surround the site. A power plant would be consistent with the zoning.

Use of this site would require construction of a new switchyard and transmission lines. The electrical transmission interconnection would be between 4.4 and 4.8 miles long from the plant site to Southern California Edison's (SCE) Laguna Bell Substation. Natural gas would be supplied to the new power plant via a 2,300-foot-long, 24-inch pipeline. This pipeline would extend from where it connects to Line 765 at Downey Road, then head west along East 50th Street, turn south on Alcoa Avenue and then east along Fruitland Avenue to the plant site.

Recycled water for the cooling tower will be delivered to VPP through a recycled water pipeline located in Boyle Avenue, adjacent to the site. Potable water will also be provided to the plant by two 10-inch lines. One line would connect to the existing water main in Boyle Avenue and one line to the main in Fruitland Avenue. Potable water will be used for drinking, safety showers, fire protection, service water, and sanitary uses. Sanitary wastewater disposal will be to the City's sanitary sewer system via a 2,400-foot-long pipeline that would connect to a 24-inch sewer main owned by the Sanitation Districts of Los Angeles County (LACSD).

The facility would be located in an area that has several tall industrial structures within the context of industrial uses. The nearest residential uses to the project, which are potentially sensitive noise receptors, are located about 1,000 feet east of the site. There is also a subdivision located 2,000 feet east of project in the City of Maywood.

The City has entered into a purchase agreement for the site, which was selected to meet the basic objectives of the project, including, but not limited to the following:

- To safely construct and operate a nominal 914-MW, natural-gas-fired, combined-cycle generating facility within the City of Vernon.
- To assist the City in repositioning its generation asset portfolio to 100 percent local generation.
- To assist the State of California (State) in developing increased local generation projects, thus reducing dependence on imported power by providing reliable power supply to the California Independent System Operator (CAISO) grid.

9.3.2 Alternative Sites

The City also identified and assessed the suitability of several other properties for VPP.

Four potential sites that have available land were identified. Figure 9.3-1 (figures are at the end of the subsection) shows the location of the alternative sites that were considered for construction of VPP.

9.3.2.1 Alternative Site Selection Criteria

The criteria developed to evaluate the alternative sites' suitability for VPP correspond with the reasons the proposed site was selected. These criteria include the following:

- **Proximity to infrastructure—**The site needs to be located in close proximity to high voltage transmission lines, a high-pressure major gas transmission system, and potential water source(s).
- **Environmental viability—**The site should have few or no environmentally sensitive areas and should allow development with minimal environmental impacts.
- **Minimal impact on surrounding community—**The site should enable the development of a power plant with minimal negative impact on the surrounding community.
- **Economically feasible—**The site should be located on property currently owned by the City with sufficient right-of-ways for linear alignments should offsite construction be needed.
- **Compliance with LORS—**The site should provide opportunity for compliance with all laws, ordinances, regulations, and standards (LORS).
- **Size—**The site should be of sufficient land area (about 13 acres or larger)
- **Support Areas—**The site should have construction laydown and parking areas within 0.25 mile of the site.

The alternative site locations, shown in Figure 9.3-1, were evaluated using the above criteria. The site characteristics are summarized in Table 9.3-1 and described in the following subsections.

TABLE 9.3-1
Comparison Using Site Selection Criteria

Alternative Site	Parcel Size and Shape	Land Use Compatibility	Available Linear Facilities*	Environmental Sensitivity	Distance to Residential/ Laydown
Vernon Power Plant (proposed site)	27 acres; long rectangular shapes	Zoned: General Industrial	PW: tap into existing line G: 2,300 feet T: 4.4 miles RW: adjacent to plant site S: 2,400 feet	Low	6 homes, 1,000 feet; Subdivision 2,000 feet/ Laydown adjacent to plant site
Former Food Plant	<13 acres; rectangular shape	Zoned: General Industrial	PW: tap into existing line G: 1 mile T: 5.0 miles RW: 2,000 feet S: 1 mile	Low	1 apartment unit, 750 feet; Subdivision at, 1,500 feet/ Laydown: need several remote lots >0.25 but <0.5 miles
Recycling Yard	<13 acres; square shape; need several remote lots; >0.25 away	Zoned: General Industrial	PW: tap into existing line G: 2,000 feet T: 5.4 miles RW: 1.2 miles S: tap into existing line, upgrade required	Low	Subdivision at 1,500 feet/Laydown: need several remote lots >0.25 miles away
City of Vernon Storage Yard	<13 acres; rectangular shape	Zoned: Heavy Industrial	PW: tap into existing line G: 1,000 feet T: 5.1 miles RW: 1.0 mile S: tap into existing line, upgrade required	Low	Subdivision at 3,500 feet/Laydown: need several remote lots >0.25 miles away
Watkins Property	17.5 acres; odd shape	Zoned: Heavy Industrial	PW: Tap into existing line G: 1.5 miles T: 12.5 miles RW: 3 miles S: tap into existing line, upgrade may be required	Low	Subdivision at 1,000 feet/Laydown: some adjacent parking; would need additional remote lots

Notes:
* PW: = potable water; G: = natural gas; T= transmission; RW: = recycled water, S:= sewer line.

9.3.2.2 Alternative Site Descriptions

In this section, each of the alternative sites is described and analyzed based on its feasibility for use. Environmental considerations are presented in Subsection 9.3.2.3.

9.3.2.2.1 Former Food Plant Site

This almost rectangular site is located immediately south of the recently completed Malburg Generating Station at 5001 Soto Street. The site is surrounded by industrial uses, and is zoned Industrial. A power plant would be consistent with the zoning. However, the site is less than 13 acres in size.

Use of the Former Food Plant site would require construction of a new switchyard and about 5 miles of new transmission line (to connect to the SCE transmission system). It would also require a new sanitary sewer line approximately 1 mile long; a natural gas pipeline, also about 1 mile long; and a 2,000-foot-long recycled water line. Potable water would be

provided via city mains located in Soto Street and Seville Avenue. Use would require remote construction parking and laydown areas. Sufficient parking/laydown areas are within 0.5 miles radius. The nearest residential use to the project, which is a potentially sensitive noise receptor, is located approximately 750 feet to the northeast of this site.

9.3.2.2.2 Recycling Yard Site

The square Recycling Yard site is s located at 2221 East 55th Street, due west of the proposed site. The site is surrounded by industrial uses, and is zoned Industrial. A power plant would be consistent with the zoning. However, the site is less than 13 acres in size.

Use of the Recycling Yard site would require construction of a new switchyard and transmission lines approximately 5.4 miles long, a natural gas pipeline approximately 2,000 feet long, and a recycled water pipeline approximately 1.2 miles long. Additionally, from this site it would be necessary to tap into existing water and sewer lines, which would have to be brought to the site.

The facility would be located within an industrial area of the City of Vernon that has several nearby tall industrial structures. Use would require remote construction parking and laydown areas. It is not known whether sufficient parking/laydown areas are within 0.5-mile radius. The nearest residential uses to the project, which are potentially sensitive noise receptors, are located approximately 1,500 feet to the west of this site. There is a school located approximately 0.5 mile northwest of this site.

9.3.2.2.3 City of Vernon Storage Yard

The rectangular City of Vernon Storage Yard site would be located at 2800 South Soto Street, due north of the proposed site. The site is surrounded by industrial uses, and is zoned Industrial. A power plant would be consistent with the zoning. However, the site is less than 13 acres in size.

Use of the City Storage Yard site would also require construction of a new switchyard and transmission lines approximately 5.1 miles long, a natural gas pipeline approximately 1,000 feet long, and a recycled water pipeline approximately 1 mile long. The site currently has water and sewer service, but an upgrade would be required. The storage yard would have to be cleared and its contents moved to another location. Use would also require remote construction parking and laydown areas. It is not known whether sufficient parking/laydown areas are within 0.5-mile radius.

The facility would be located within an industrial area of the City of Vernon that has several nearby tall industrial structures. The nearest residential uses to the project, which are potentially sensitive noise receptors, are located approximately 3,500 feet north of this site. There is a school located approximately 0.7 mile northeast of this site.

9.3.2.2.4 Watkins Property

The odd-shaped Watkins Property is situated at the corner of Ayers Avenue and Bandini Boulevard, northeast of the proposed site. The site is surrounded by industrial uses and is zoned Heavy Industrial. A power plant would be consistent with the zoning. The site is sufficiently large for a power plant of this size.

Use of the Watkins Property would also require construction of a new switchyard and transmission lines approximately 2.5 miles long and a recycled water pipeline

approximately 3 miles long. A new gas line 1.5 miles long would also be needed. The site currently has water and sewer service. However, an upgrade to the sewer line may be required. The storage yard would have to be cleared and its contents moved to another location. There would be some room onsite for construction parking/laydown areas; however, additional space would be needed. It is not known whether sufficient parking/laydown areas are within 0.5-mile radius.

The facility would be located within an industrial area of the City of Vernon that has several nearby tall industrial structures. The nearest residential uses to the project, which are potentially sensitive noise receptors, are located about 1,000 feet south of this site. There is a school located approximately 1,000 feet south of the site and a church located approximately 4,000 feet northeast of this site.

9.3.2.3 Environmental Considerations

In this section, the potential environmental impacts of the four alternative sites are discussed in comparison to the proposed site. The No Project alternative is also analyzed. Potential environmental impacts from use of the proposed site are presented in more detail in the 16 environmental subsections of Section 8 of the Application for Certification (AFC). Table 9.3-2 (located at the end of this section) summarizes the impacts of each alternative site in comparison to the proposed site. Unless otherwise stated, it is assumed that the No Project alternative would not provide the benefits of the project, would not meet the basic project objectives of the Applicant, and would not result in the impacts associated with the project.

9.3.2.3.1 Air Quality

The plant's configuration and operation would be essentially the same at every location from an air quality perspective. The type and quantity of air emissions from the alternative sites would be identical. However, the impacts on the human population and the environment may differ slightly because of the location of residences and other human uses in the project vicinity. Local terrain is similar at all sites and not likely to change impacts. All of these sites are in the same air basin and offsets acquired by the City of Vernon would be equally appropriate for every site. Potential impacts of the project to residents are discussed in Subsection 8.6, Public Health, and potential impacts on wildlife are discussed in Subsection 8.2, Biological Resources.

Without this plant, it is likely that older plants that create more air pollution than the proposed project would remain online. In addition, electrical losses would result from the transmission of power over longer distances. Thus, overall, the air quality would be slightly worse than if the plant were not built.

9.3.2.3.2 Biological Resources

Special status species that are recorded, or that potentially occur in the region, are the same for all sites. Each alternative site is considered within the potential habitat range of Cooper's hawk (species of special concern), peregrine falcon (state endangered), sharp skinned hawk (species of special concern), and burrowing owl (federal and state special concern). As with the proposed site, all four alternative sites are within an industrial zone (with little to no habitat for special status species), are developed (having the ground covered by either

gravel or asphalt), and have no natural biological habitat. None of the sites would directly affect threatened or endangered species from development of the project site.

With the No Project alternative, the sites would remain in the current state and no additional biological impacts would occur. However, the sites would likely be developed for other industrial or commercial uses.

9.3.2.3.3 Cultural Resources

The proposed site and the four alternative sites have similar cultural impacts. Each site is located within the Los Angeles River Basin, and within an industrial area comprising historic structures. However, all four sites are located in an area that has been highly disturbed by past and current industrial operations. A record search of the area was performed by staff of the Central California Information Center, South Central California Information Center (California State University, Fullerton). Cultural resource sensitivity is generally considered low.

With the No Project alternative, there would be no impact to archeological or historic resources although sensitivity is low.

9.3.2.3.4 Land Use

The proposed site and the four alternative sites are located in the City of Vernon. A summary of the land use issues is provided in Table 9.3-3.

TABLE 9.3-3
Land Use Status of Sites

Site Location	Zoning	General Plan
Vernon Power Plant	General Industrial	General Industrial
Former Food Plant	General Industrial	General Industrial
Recycling Yard	General Industrial	General Industrial
City of Vernon Storage Yard	Heavy Industrial	Heavy Industrial/Warehousing
Watkins Property	Heavy Industrial	Heavy Industrial/Warehousing

The Proposed Plant, Former Food Plant and the Recycling Yard sites are zoned as General Industrial. A power plant is consistent with the zoning for these sites. No additional land use entitlements are required for the use of these sites.

The City of Vernon Storage Yard and Watkins Property sites are zoned Heavy Industrial. A power plant is consistent with the zoning for both sites.

With the No Project alternative, the land uses would remain as they are, and are presumed to be consistent (or to be developed consistent), with existing land use plans and policies.

9.3.2.3.5 Noise

The proposed site has 6 houses located approximately 1,000 feet to the east on Downey Road. Sources of environmental noise in the project area include the numerous industrial operations, significant heavy truck traffic on local roads, and the nearby railroad lines.

Noise from industrial activities occurs on a 24-hour basis. The proposed VPP will produce noticeable noise during operations, but the noise levels will be in compliance with City of Vernon's requirements for industrial properties. The noise levels are also somewhat blocked by a barrier effect provided by the buildings surrounding the site.

The Former Food Plant site has a rental unit approximately 750 feet to the northeast of the site above a restaurant. The MGS is between this dwelling unit and the proposed site. Other sources of environmental noise in the project area include numerous industrial operations, significant heavy truck traffic on local roads, and nearby railroad lines. Noise from industrial activities occurs on a 24-hour basis. The proposed VPP will produce noticeable noise during operations, but the noise levels will be in compliance with City of Vernon's requirements for industrial properties. The noise levels are also somewhat blocked by a barrier effect provided by the buildings surrounding the site.

Both the Recycling Yard and the City of Vernon Storage Yard alternatives have nearby residences. The Recycling Yard has a subdivision located approximately 1,500 feet to the west of the site, and the City of Vernon Storage Yard is approximately 3,500 feet south from the closest resident. Sources of environmental noise in the area include industrial operations, truck traffic, and railroad lines. A power plant would produce noticeable noise during operations, but the noise levels would be in compliance with the City's requirements. Noise would be somewhat blocked by the surrounding buildings.

The Watkins Property is located approximately 1,000 feet north of the nearest residences and a school. Sources of environmental noise in this area include a railyard, industrial operations, and heavy truck traffic. A power plant sited at this location would produce noticeable noise during operations, but the noise levels would be in compliance with the City's noise requirements. However, unlike the other two alternative sites, the site is not surrounded by buildings that could provide a buffering effect. Instead, to the south is the Los Angeles River, and just south of that is a subdivision. Noise from the site would likely directly impact the residents in that subdivision.

The No Project alternative would not result in further immediate development in these areas and ambient noise levels would likely remain unaffected.

9.3.2.3.6 Public Health

The proposed site and the four alternative sites, are located within 1 mile of sensitive receptors such as schools, hospitals, churches, residential areas, or other facilities that would potentially be considered sensitive receptors for public health. However, public health impacts are generally related to air quality, which is not expected to result in significant impacts. At a screening level, the sites appear equivalent with respect to potential impacts.

Under the No Project alternative, land uses would remain the same. Therefore, there would be no change to public health.

9.3.2.3.7 Worker Health and Safety

Potential impacts on worker health and safety are activity-specific rather than site-specific. Regardless of the location, VPP will prepare appropriate health and safety plans to protect workers and reduce the potential for injuries. Therefore, the worker health and safety impacts from all of the alternative sites are equivalent to the proposed site.

Under the No Project alternative, there would be no construction and, therefore, no impacts to workers.

9.3.2.3.8 Socioeconomics

All sites are located in the City of Vernon in Los Angeles County. The City of Vernon is one of 88 cities within Los Angeles County, and it is likely that most local purchases for construction and operation supplies would be made in Los Angeles County. Since the point of sale and the county of sale receive the greater portion of sales taxes that are not retained by the state, the local impacts would be similar among the alternatives since they are all located in Los Angeles County.

Workforce would likely come from Los Angeles County, and possibly Ventura, Orange, Riverside, and San Bernardino counties. Due to the proximity of these counties, the origin of the workforce would not change among the alternative sites. Environmental justice issues would also be similar for all of the sites.

With the No Project alternative, no economic benefit would be realized within the region of influence.

9.3.2.3.9 Agriculture and Soils

The proposed site and the four alternative sites are located in areas with heavy industrial uses. All four sites have a relatively low capability to support commercial crop production. The proposed and alternative sites will not affect any Prime Farmlands or other important farmlands because the site and surrounding areas have already been developed for urban land uses (industrial, commercial, and residential). T

Under the No Project alternative, the areas would remain in industrial use and soils currently used for agricultural purposes would not be affected.

9.3.2.3.10 Traffic and Transportation

All of the sites are easily accessible via the Long Beach Freeway (I-710), and the San Bernardino Freeway (I-10). The area can be accessed by heading west on the Bandini exit from I-710 or by heading south from I-10 or I-5. All four sites would be accessed by collector roads; however, the entire area is served through a north/south, east/west grid of roads making construction traffic easily dispersed throughout the road network. All intersections except Atlantic Boulevard/Bandini Boulevard operate at an acceptable level-of-service during morning and afternoon peak commute traffic. That intersection provides the closest access to the Watkins Property.

The Union Pacific, Los Angeles Junction, and Santa Fe Railroads have main lines within the City. There is an existing Los Angeles Junction railroad spur located on the south and west sides of the proposed project site and the Food Plant site that may be used for delivery of large or heavy equipment. The City of Vernon Storage Yard and Recycling Yard sites do not have any rail lines or railroad spurs near, or adjacent to, the site for use in transporting heavy equipment. However, there is a rail yard less than a mile from these sites.

Watkins Property is located about a quarter-mile south of the main railyard in Vernon. Although there are not any rail spurs on the site, a rail line runs parallel and approximately 100 feet south of the south property line of the site.

Proximity to rail lines would allow heavy equipment (turbines and heat recovery steam generator [HRSG] components) to be shipped by rail. Therefore, the proposed site, the Former Food Plant site and the Watkins Property have a slight advantage from a traffic perspective.

The No Project alternative would have no impact on traffic.

9.3.2.3.11 Visual Resources

The potential for visual resource impacts associated with each of the sites varies depending on the relative visibility of the sites from roads and residences and the length and potential visibility of any new transmission lines that the power plant would require. Visual impacts are also a function of the surrounding facilities.

All four alternative sites and the proposed project site are located in a heavily industrial area. However, due to the density and size of the surrounding industrial buildings, the projected viewshed is limited to adjacent streets for the proposed VPP site, Former Food Plant, Recycling Yard and the City Storage Yard sites. Large industrial buildings block the majority of views from most locations within the surrounding area. Additionally, there are no elevated points with views of the project, as the topography of the City is generally flat.

At the Watkins Property industrial buildings surround the site. However, the southwest a portion of the site backs up against the Los Angeles River. Residential subdivisions are located across the river on the south side of District Boulevard but views of the site from that area are blocked by industrial buildings between the residences and the Los Angeles River. To the east an unobstructed view of the site would be seen from motorists traveling along I-710.

The No Project alternative would avoid visual impacts from the development of a power plant and would avoid introducing additional tall structures such as exhaust stacks and transmission lines into areas that do not have them.

9.3.2.3.12 Hazardous Materials Handling

The same quantity of hazardous materials would be stored and used at all locations. Delivery of aqueous ammonia and other hazardous materials is typical in the region because of widespread industrial uses in this area. Additional deliveries for the facility would be consistent with existing conditions.

The No Project alternative would avoid the incremental increase in transportation, use, and storage of hazardous materials during construction and operation of a power plant.

9.3.2.3.13 Waste Management

The same quantity of waste would be generated at the proposed site as at the alternative sites. The environmental impact of waste disposal would not differ significantly between the alternative sites.

The No Project alternative would eliminate the need to dispose of liquid and solid waste from the construction and operation of the power plant.

9.3.2.3.14 Water Resources

Industrial water for the plant at any site would consist of recycled water from the Central Basin Municipal Water District (CBMWD). Use of recycled wastewater is considered preferable to use of surface water or groundwater. Therefore, all sites are generally equivalent with respect to water use. However, the Former Food Plant site would need about 2,000 feet; the Recycling Yard and City Storage sites would need about 1 mile of new recycled water line; whereas, recycled water will be available in Boyle Avenue, adjacent to the proposed site. The development of the proposed power plant is also prompting CBMWD to enhance its recycled water system by constructing 10 miles of new recycled water line.

The No Project alternative would not create an additional demand for recycled water, and therefore, it would not spur the development of additional capacity of the recycled water system.

9.3.2.3.15 Geologic Hazards and Resources

Due to the screening level of this analysis and proximity of the sites to each other, no site-specific seismic analysis was performed. The potential for seismic impacts would be essentially the same for all plants and can be addressed in plant design.

The No Project alternative would not affect geological hazards or resources.

9.3.2.3.16 Paleontological Resources

In the vicinity of all of these sites, an alluvial fan extends south and southwest from the Hollywood and Glendale Hills to the ocean, on what was once the floodplain of the Los Angeles River. The Los Angeles River lies less than a mile to the northeast and east of the project site. Geological materials composing the alluvial fan in the vicinity of this site is underlain by Late Quaternary (Late Pleistocene and Holocene) alluvium, which locally consists of unconsolidated Los Angeles River floodplain and alluvial fan deposits of silt, sand, and gravel derived from the hills and mountain ranges that form the northern border of the central Los Angeles basin. Quaternary (Pleistocene and Holocene) terrestrial sediments underlie this general area, and would be affected by project construction. The undisturbed Quaternary sediments beneath the project site and offsite laterals possess high paleontologic sensitivity. Therefore, sites located adjacent to the Los Angeles Basin (City Storage Yard and Watkins Property) are considered to have a higher potential for paleontological impacts. The Recycling Yard, Former Food Plant and the proposed VPP sites are considered to have slightly lower potential for paleontological impacts. In any case, the paleontological impacts could be mitigated below the level of significance at all sites.

The No Project alternative would not affect paleontological resources.

9.4 Selection of the Proposed Site

Table 9.4-1 compares the potential environmental impacts of the proposed VPP site with the other alternatives. As shown in the table, no alternative site would feasibly attain most of the basic objectives of the project while also avoiding or substantially lessening any potentially significant effects of the project.

The VPP site has some advantages; such as nearby tall industrial structures, proximity to rail lines, proper zoning, and minimal biological and cultural sensitivity and linear corridors of reasonable length. However, the VPP plant site has residential receptors nearby.

All four alternative sites are located within an industrial area on land zoned and used for industrial purposes. The four alternative sites are located near industrial uses that operate 24 hours per day, 7 days per week and, therefore, would have high ambient noise levels.

The proposed VPP site has the second shortest transmission corridor of about 4.4 miles to the Laguna Bell Substation. A natural gas line would also need to be constructed at this site, approximately 2,300 feet in length. Recycled water will be obtained from the main in Boyle Avenue. The nearest residential receptor is located approximately 1,000 feet from the VPP site; however, the noise from the VPP would be buffered by surrounding buildings in the area.

The Recycling Yard site has advantages in that it is slightly farther from residential receptors, and is located adjacent to a rail spur. However, the site is substantially smaller than the 13 acres needed to site a 914-MW (net) facility, and is disqualified as a viable alternative. In addition, it has insufficient transmission line capacity, and would require a new 5.4 mile-long transmission line and 1.2 miles of recycled water line. A natural gas line would also need to be constructed at this site, approximately 2,000 feet in length.

The City of Vernon Storage Yard site has advantages in that it is slightly farther from residential receptors. However, the site is substantially smaller than the 13 acres needed to site a 914-MW (net) facility, and is disqualified as a viable alternative. In addition, it has insufficient transmission line capacity and would require a new 5.1-mile-long transmission line and a 1.0-mile-long recycled water line. A natural gas line would also need to be constructed at this site, approximately 1,000 feet long in length. Due to the closer proximity of the Los Angeles River Basin, the paleontological sensitivity in this area is slightly higher.

The Watkins Property has advantages in that it is located adjacent to a rail spur; however, the site is located approximately 1,000 feet away from a residential subdivision. Noise from this site would be projected toward the subdivision. In addition, it would require a new 3-mile-long recycled water line. It has the advantage of being the closest to the SCE substation, requiring only a 2.5 mile long transmission line. Also, due to the close proximity of the LA River Basin, the paleontological sensitivity in this area is slightly higher.

TABLE 9.4-1
Comparison of the Proposed Site and Alternative Site Locations

Characteristic	VPP (proposed)	Former Food Plant	Recycling Yard	City of Vernon Storage Yard	Watkins Property
Size of parcel (parcel must be about 13 acres or larger)	Yes	Disqualified (parcel too small)	Disqualified (parcel too small)	Disqualified (parcel too small)	Yes
Potential presence of threatened and endangered species/habitat	Low	Low	Low	Low	Low
Potential cultural/ archaeological sensitivity	Low	Low	Low	Low	Low
Appropriate zoning	Yes	Yes	Yes	Yes	Yes
Proximity to sensitive noise receptors	6 residences within 1,000 feet	1 apartment unit, 750 ft.	1,540 feet to nearest subdivision	3,480 feet to nearest subdivision	1,000 feet to nearest subdivision
Potential for noise in residential areas	Low	Moderate	Low	Low	Moderate
Risk to humans from deposition of air pollutants	Low	Low	Low	Low	Low
Removal of prime agricultural land	No	No	No	No	No
Traffic and transportation	Low	Low	Low	Low	Moderate
Potential visual sensitivity	Low	Low	Low	Low	Moderate
Risk to humans from offsite migration of hazardous materials	Low	Low	Low	Low	Low
Ability to use water consistent with State Water Resources Control Board policy	Yes	Yes	Yes	Yes	Yes
Distance to recycled water line	Tap into main on Boyle Ave.	2,000 feet	1.2 miles	1.0 mile	3.0 miles
Potential paleontological sensitivity	Medium	Medium	Medium	High	High
Proximity to adequate construction laydown/parking	Adjacent	<0.5-mile radius	>0.25-mile radius	>0.25-mile radius	Adjacent, but would need remote too
Existing gas supply	1,600 feet	1 mile	2,000 feet	1,000 feet	1.5 miles
Existing transmission (SCE))	4.4 miles	5.0 miles	5.4 miles	5.1 miles	2.5 miles

9.5 Linear Corridors

Linear facilities required for VPP include a potable water line, a recycled water line, a sewer line, a natural gas supply line, and an electric transmission line (see Figure 2.1-1). The proposed linear facilities are presented in Section 2.0, Project Description; Section 5.0, Electric Transmission; Section 6.0, and Natural Gas Supply. This section describes the alternative routes considered.

9.5.1 Potable Water Supply

Potable water will be provided from the City of Vernon's potable water system by connecting to an existing water main in Boyle Avenue and an existing water main in Fruitland Avenue. Due to their proximity to the site, no alternatives were considered.

9.5.2 Recycled Water

Recycled water will be supplied by the Central Basin Municipal Water District (CBMWD). The recycled water will be delivered to VPP through a recycled water pipeline located in Boyle Avenue, adjacent to the site. Due to its proximity to the site, no alternatives were considered.

9.5.3 Sanitary Sewer Line

An 18-inch sanitary sewer line would exit the plant site from the southeast corner, follow the east edge of the parcel and along the railroad right-of-way to Alcoa Avenue, turning south on Alcoa Ave the line would be 21 inches in diameter to the point where it connects to the LACSD 24-inch line at Alcoa and Slauson avenues. Construction would be by open trench. Due to its short distance (about 2,400 feet), no alternatives were considered.

9.5.4 Natural Gas Supply Line

The 24-inch natural gas pipeline would run east about 2,300 feet from the plant site along Fruitland Road, turn north on Alcoa Avenue and then continue east along East 50th Street to the intersection with South Downey Road and East 50th Street, where it would tie into the Southern California Gas Company (SoCalGas) main pipeline, Line 765. Construction would be by open trench. Because of the short distance and direct route no alternative routes were considered.

9.5.5 Electric Transmission Lines

Two viable routes were considered for connecting the plant to SCE's transmission system at its Laguna Bell Substation in the City of Commerce: the River Route and the Randolph Route. The River Route exits the power plant site to the east, crosses Alcoa Avenue, and approaches the LADWP right-of-way. It continues by crossing the LADWP right-of-way and turning north on an easement on the east side of the LADWP right-of-way. It then proceeds east between the south side of the Leonis Substation and the north side of the Fire Station to the west side of Downey Road. On the west side of Downey Road, it heads north to District Boulevard and proceeds east where it follows the Los Angeles River south to Randolph Street. On Randolph Street the line turns east to Laguna Bell Substation.

The Randolph Route also exits the site on the east and crosses to the east side of Alcoa Avenue. It heads south on Alcoa Avenue to Randolph Street, then heads east along Randolph Street to the Laguna Bell Substation.

Both options are addressed in the AFC analysis. The option of connecting to the LADWP power grid was considered and rejected. It is discussed below.

9.5.5.1 Connection to LADWP

In addition to connecting to the SCE transmission system, VPP also considered connecting to the LADWP system[1], located about 1,000 feet to the east of the power plant. An option that was considered was to connect VPP to the power grid by looping both circuits of the LADWP Velasco to Century 230-kV line into the plant switchyard. Although technically feasible, LADWP requires substantial annual transmission fees to use its system. These transmission fees are large enough that they potentially make the project financially infeasible. Also, LADWP reserves transmission capability for its generation independent of the generator's economic efficiency. As a result of LADWP's implicit transmission reservation there are potential system impacts that must be mitigated when LADWP is exporting power. While Vernon believes these impacts might be mitigated without significant environmental impacts, LADWP's transmission planners[2] have not accepted these mitigation techniques. Payment of the transmission fees and the potential for transmission system impacts under LADWP's export scenario make this alternative infeasible.

9.6 Alternative Project Configurations

The proposed project configuration of VPP is the result of considering a variety of design and operating limitations. The main factors affecting the configuration include available gas turbine-generator sizes, economies of scale for both construction and operation of the plant, fuel supply, power transmission capacities, and forecast market demand for electrical power. Two combustion turbine suppliers were evaluated for the VPP project: GE Energy and Siemens Power Generation, the two largest suppliers of gas and steam turbine power generation equipment in the world. The evaluations included 3 months of communications; the exchange of engineering and commercial documents; and reviewing the technologies on the basis of cost, schedule, power, heat rate and—most importantly—environmental considerations in respect to power generation emissions. Based on these evaluations, the decision was made to select Siemens Power Generation.

A 3x1 configuration using the Siemens SGT6-5000F combustion turbines provides excellent overall plant reliability by having more generators with fewer megawatts per generator. In other configurations such as a 1x1, a gas turbine outage or trip may force a shutdown of the entire plant. In a 2x1 configuration, a single gas turbine outage or trip would shut down half the plant; however, a 3x1 configuration would allow for a up to 75 percent of the base load if one of the units were in an outage or trip.

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[1] VPP completed a Preliminary Study (LADWP's rough equivalent of a CAISO System Impact Study) for a 610 MW connection to LADWP and submitted this draft to LADWP for review.

[2] March 17, 2006 Email from Wu, Tim (Chuan-Hsier) [Chuan-Hsier.Wu@ladwp.com] to Stephen S. Miller and Abraham Alemu.

9.7 Alternative Technologies

Other generation technologies considered for VPP are grouped according to the fuel used:

- Oil and natural gas
- Coal
- Nuclear
- Hydroelectric
- Biomass
- Solar
- Wind

Alternative technologies were evaluated with respect to commercial availability, implementability, and cost-effectiveness.

9.7.2.1 Oil; Natural Gas; Coal; Conventional and Supercritical Boiler/Steam Turbine, or Simple Combustion Turbine

These technologies are commercially available, and could be implemented. However, because of relatively low efficiency, they emit a greater quantity of air pollutants per kilowatt-hour generated than technologies that are more efficient. The cost of generation is relatively high relative to combined-cycle/natural gas-fired technologies.

9.7.2.2 Nuclear

California law prohibits new nuclear plants until the scientific and engineering feasibility of disposal of high-level radioactive waste has been demonstrated. To date, the California Energy Commission (CEC) is unable to make the findings of disposal feasibility required by law for this alternative to be viable in California. The technology, therefore, is not implementable.

9.7.2.3 Water

These technologies use water as "fuel," and include hydroelectric, geothermal, and ocean energy conversion.

9.7.2.3.1 Hydroelectric

Most of the sites for hydroelectric facilities have already been developed in California and any remaining potential sites face lengthy environmental licensing periods. It is doubtful that this technology could be implemented within 3 to 5 years, and the cost would probably be higher than the cost of a conventional combined-cycle. There are no hydroelectric sites within the city.

9.7.2.3.2 Geothermal

Geothermal development is not viable at the VPP project location because suitable thermal vents and strata are not present. Therefore, it was eliminated from consideration.

9.7.2.4 Biomass

Major biomass fuels include forestry and mill wastes, agricultural field crop and food processing waste, and construction and urban wood wastes. Their cost tends to be high relative to conventional combined-cycle units burning natural gas.

9.7.2.5 Solar

Most of these technologies collect solar radiation, heat water to create steam, and use the steam to power a steam turbine/generator. Power is only available while the sun shines so the units do not supply power that can be cycled up or down to follow demand. The cost of solar power is relatively high when compared to combined-cycle units burning natural gas.

9.7.2.6 Wind Generation

In California, the average wind generation capacity factor has been 25 to 30 percent and, like solar, cannot be cycled up and down to track demand. The cost of generation is generally above the cost of combined-cycle units burning natural gas. There are no wind generation sites located within the City.

9.8 References

California Energy Commission. 1995. 1994 Biennial Electricity Report (ER94), P300-95-002. November.

TABLE 9.3-2
Summary Comparison of Environmental Effects of Alternative Project Sites

Resource	VPP (Proposed)	Former Food Plant	Recycling Yard	City Storage Yard	Watkins Property
Air Quality	Emissions from the plant would be the same at every location. It is assumed that offsets would be available for every site. Construction impacts would be in the low range since this site would require less than 1 mile of pipeline construction (combining both gas and sewer), and 4.4 miles of transmission line construction. Overall, air quality impacts would be expected to be less than significant.	Emissions from the plant would be the same at every location. It is assumed that offsets would be available for every site. Construction impacts would be in the low to mid-range since this site would require construction of 2 pipelines about 1 mile long each; and 5 miles of transmission line. Overall, air quality impacts would be expected to be less than significant.	Emissions from the plant would be the same at every location. It is assumed that offsets would be available for every site. Construction impacts would be in the low range since this site would require approximately 1.5 miles of pipeline construction; and 5.4 miles of transmission line. Overall, air quality impacts would be expected to be less than significant.	Emissions from the plant would be the same at every location. It is assumed that offsets would be available for every site. Construction impacts would be low since this site would require 1.2 miles of pipeline construction; and 5.1 miles of transmission line. Overall, air quality impacts would be expected to be less than significant.	Emissions from the plant would be the same at every location. It is assumed that offsets would be available for every site. Construction impacts would be in the low to mid-range since this site would require at least 3 miles of recycled water pipeline, plus construction of a sewer line and 2.5 miles of transmission line. Overall, air quality impacts would be expected to be less than significant.
Biological Resources	The site is in an industrial area providing little to no usable habitat for wildlife. The project site is surrounded on four sides by industrial uses. No sensitive habitat is present.	The site is in an industrial area providing little to no usable habitat for wildlife. The project site is surrounded on four sides by industrial uses. No sensitive habitat is present.	The site is in an industrial area providing little to no usable habitat for wildlife. The project site is surrounded on four sides by industrial uses. No sensitive habitat is present.	The site is in an industrial area providing little to no usable habitat for wildlife. The project site is surrounded on four sides by industrial uses. No sensitive habitat is present.	The site is in an industrial area providing little to no usable habitat for wildlife. The project site is surrounded by industrial uses and backs up to the Los Angeles River. No sensitive habitat is present.
Cultural Resources	The plant vicinity has been surveyed several times. Based on these surveys, the location is expected to have low cultural sensitivity. With implementation of appropriate mitigation measures, it is anticipated that potential cultural resource impacts could be mitigated below the level of significance.	The plant vicinity has been surveyed several times. Based on these surveys, the location is expected to have low cultural sensitivity. With implementation of appropriate mitigation measures, it is anticipated that potential cultural resource impacts could be mitigated below the level of significance.	A cultural resource search has not been performed for this site. However, based on the location of this site and its proximity to the proposed site, this site is anticipated to have low cultural sensitivity. With implementation of appropriate mitigation measures, it is anticipated that potential cultural resource impacts could be mitigated below the level of significance.	A cultural resource search has not been performed for this site. However, based on the location of this site and its proximity to the proposed site, this site is anticipated to have low cultural sensitivity. With implementation of appropriate mitigation measures, it is anticipated that potential cultural resource impacts could be mitigated below the level of significance.	A cultural resource search has not been performed for this site. However, based on the location of this site and its proximity to the proposed site, this site is anticipated to have low cultural sensitivity. With implementation of appropriate mitigation measures, it is anticipated that potential cultural resource impacts could be mitigated below the level of significance.

TABLE 9.3-2
Summary Comparison of Environmental Effects of Alternative Project Sites

Resource	VPP (Proposed)	Former Food Plant	Recycling Yard	City Storage Yard	Watkins Property
Land Use	The site is in the City of Vernon. It is zoned General Industrial. A power plant is consistent with this zoning.	The site is in the City of Vernon. It is zoned General Industrial. A power plant is consistent with this zoning.	The site is in the City of Vernon. It is zoned General Industrial. A power plant is consistent with this zoning.	The site is in the City of Vernon. It is zoned Heavy Industrial. A power plant is consistent with this zoning.	The site is in the City of Vernon. It is zoned Heavy Industrial. A power plant is consistent with this zoning.
Noise	The plant's noise output would be approximately the same at all sites. There are 6 residences within 1,000 feet of the plant site. Noise from the plant would be buffered by the buildings surrounding this site.	The plant's noise output would be approximately the same at all sites. There is one residence about 750 feet from the plant site. A subdivision is about 1,500 feet away. Noise from the plant would be buffered by the MGS and surrounding buildings.	The plant's noise output would be approximately the same at all sites. There is a subdivision about 1,500 feet from the plant site. Noise from the plant would be buffered by the buildings surrounding this site.	The plant's noise output would be approximately the same at all sites. There is a subdivision about 3,500 feet from the plant site. Noise from the plant would be buffered by the buildings surrounding this site.	The plant's noise output would be approximately the same at all sites. There is a subdivision about 1,000 feet from the plant site. Buildings are adjacent to the facility on three sides (north, west, and east).Their is a subdivision is to the southwest, but industrial buildings are between the plant and the residences.
Public Health	The impacts are directly related to air quality impacts described above, considered to be less than to be significant.	The impacts are directly related to air quality impacts described above, considered to be less than to be significant.	The impacts are directly related to air quality impacts described above, considered to be less than to be significant.	The impacts are directly related to air quality impacts described above, considered to be less than to be significant.	The impacts are directly related to air quality impacts described above, considered to be less than to be significant.
Worker Health and Safety	Same worker health and safety plans would be implemented at each site.	Same worker health and safety plans would be implemented at each site.	Same worker health and safety plans would be implemented at each site.	Same worker health and safety plans would be implemented at each site.	Same worker health and safety plans would be implemented at each site.
Socioeconomics	Potential impact to schools and public services is anticipated to be the same at all locations. Construction workforce would have to travel about the same for each location. Same benefit to Los Angeles County from purchase of goods and services.	Potential impact to schools and public services is anticipated to be the same at all locations. Construction workforce would have to travel about the same for each location. Same benefit to Los Angeles County from purchase of goods and services.	Potential impact to schools and public services is anticipated to be the same at all locations. Construction workforce would have to travel about the same for each location. Same benefit to Los Angeles County from purchase of goods and services.	Potential impact to schools and public services is anticipated to be the same at all locations. Construction workforce would have to travel about the same for each location. Same benefit to Los Angeles County from purchase of goods and services.	Potential impact to schools and public services is anticipated to be the same at all locations. Construction workforce would have to travel about the same for each location. Same benefit to Los Angeles County from purchase of goods and services.
Agriculture and Soils	Would result in no loss of agricultural uses in County.	Would result in no loss of agricultural uses in County.	Would result in no loss of agricultural uses in County.	Would result in no loss of agricultural uses in County.	Would result in no loss of agricultural uses in County.

TABLE 9.3-2
Summary Comparison of Environmental Effects of Alternative Project Sites

Resource	VPP (Proposed)	Former Food Plant	Recycling Yard	City Storage Yard	Watkins Property
Traffic and Transportation	No hazardous intersections apparent except the Atlantic Boulevard/Bandini Boulevard intersection, which may have impacts from construction traffic. Rail spur runs adjacent to site and would allow for heavy equipment to be delivered by rail. Impacts from traffic can be mitigated below the level of significance.	No hazardous intersections apparent except the Atlantic Boulevard/Bandini Boulevard intersection, which may have impacts from construction traffic. Rail spur runs adjacent to site and would allow for heavy equipment to be delivered by rail. Impacts from traffic can be mitigated below the level of significance.	No hazardous intersections apparent except the Atlantic Boulevard/Bandini Boulevard intersection, which may have impacts from construction traffic. Rail access about 1 mile away. Impacts from traffic can be mitigated below the level of significance.	No hazardous intersections apparent except the Atlantic Boulevard/Bandini Boulevard intersection, which may have impacts from construction traffic. Rail access about 1 mile away. Impacts from traffic can be mitigated below the level of significance.	No hazardous intersections apparent except the Atlantic Boulevard/Bandini Boulevard intersection, which may have impacts from construction traffic. Rail access about 0.25 mile away. Impacts from traffic can be mitigated below the level of significance.
Visual Resources	The plant would be in an industrial area and surrounded on all four sides by several industrial buildings. Residences in the vicinity are at a similar elevation and would have restricted views of the site. With mitigation measures, impacts would be less than significant.	The plant would be in an industrial area and surrounded on all four sides by industrial buildings. The residence in the vicinity is on a second story but would have restricted views of the site due to MGS. With mitigation measures, impacts would be less than significant.	The plant would be in an industrial area and surrounded on all four sides by several industrial buildings. Residences in the vicinity are at a similar elevation and would have restricted views of the site. With mitigation measures, impacts would be less than significant.	The plant would be in an industrial area and surrounded on all four sides by several industrial buildings. Residences in the vicinity are at a similar elevation and would have restricted views of the site. With mitigation measures, impacts would be less than significant.	The plant would be in an industrial area and surrounded by several industrial buildings. Residences to the south also have industrial buildings between them and the plant. Motorists traveling on I-710 would also have an unrestricted view of the site. With mitigation measures, impacts would be less than significant.
Hazardous Material Handling	Aqueous ammonia shipments would likely come down I- 710. Residences are close to this plant, but the plant would be designed to prevent significant offsite consequences from an ammonia rupture.	Aqueous ammonia shipments would likely come down I- 710. Residences are close to this plant, but the plant would be designed to prevent significant offsite consequences from an ammonia rupture.	Aqueous ammonia shipments would likely come down I-710. Residences are close to this plant, but the plant would be designed to prevent significant offsite consequences from an ammonia rupture.	Aqueous ammonia shipments would likely come down I- 710. Residences are close to this plant, but the plant would be designed to prevent significant offsite consequences from an ammonia rupture.	Aqueous ammonia shipments would likely come down I-710. Residences are close to this plant, but the plant would be designed to prevent significant offsite consequences from an ammonia rupture.
Waste Management	Waste generated during construction and operations would be about the same at any location.	Waste generated during construction and operations would be about the same at any location.	Waste generated during construction and operations would be about the same at any location.	Waste generated during construction and operations would be about the same at any location.	Waste generated during construction and operations would be about the same at any location.

TABLE 9.3-2
Summary Comparison of Environmental Effects of Alternative Project Sites

Resource	VPP (Proposed)	Former Food Plant	Recycling Yard	City Storage Yard	Watkins Property
Water Resources	Would use recycled wastewater, a potential benefit.	Would use recycled wastewater, a potential benefit, but would require a 2,000-foot new recycled water line.	Would use recycled wastewater, a potential benefit, but would require a new 1.2-mile recycled water line.	Would use recycled wastewater, a potential benefit, but would require a new 1-mile recycled water line.	Would use recycled wastewater, a potential benefit, but would require a new 3-mile recycled water line.
Geologic Hazards	The geologic hazards would be essentially the same at each site and can be mitigated by proper engineering.	The geologic hazards would be essentially the same at each site and can be mitigated by proper engineering.	The geologic hazards would be essentially the same at each site and can be mitigated by proper engineering.	The geologic hazards would be essentially the same at each site and can be mitigated by proper engineering.	The geologic hazards would be essentially the same at each site and can be mitigated by proper engineering.
Paleontological Resources	Paleontological sensitivity is low.	Paleontological sensitivity is low.	Paleontological sensitivity is low.	Paleontological sensitivity is moderate due to location closer to the LA River.	Paleontological sensitivity is moderate due to location closer to the LA River.

FIGURE 9.3-1
ALTERNATIVE SITES CONSIDERED
VERNON POWER PLANT
CITY OF VERNON, CALIFORNIA

CH2MHILL

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