

4.10 NOISE

Would the proposal result in:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Increases in existing noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Exposure of people to severe noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SETTING

Human response to noise is subjective and can vary greatly from person to person. Factors that can influence individual response include: intensity, frequency, and time pattern of the noise; the amount of background noise present prior to the intruding noise; and the nature of work or human activity that is exposed to the noise. The adverse effects of noise include interference with concentration, communication and sleep. At the highest levels, noise can induce hearing damage.

The unit of measurement of environmental noise is the decibel (dB). To better approximate the range of sensitivity of the human ear to sounds of different frequencies, the A-weighted decibel scale was devised. Because the human ear is less sensitive to low-frequency sounds, the A-scale de-emphasizes these frequencies by incorporating frequency weighting of the sound signal. When the A-scale is used, the decibel levels are shown as dBA. On this scale, the range of human hearing extends from about three dBA to about 140 dBA. A 10 dBA increase is perceived by most people as a doubling of the sound level. The smallest change that can be heard is about two to three dBA. Some representative noise sources, their associated dBA noise levels, and corresponding effects are shown in Figure 4.10.1.

Environmental noise levels typically fluctuate over time, and different types of noise descriptors are used to account for this variability. Useful noise descriptors measure time-averaged noise levels; these descriptors include the energy-equivalent noise level (L_{eq})¹ and the Community Noise Equivalent Level (CNEL).² The L_{eq} is the actual time-averaged noise level, while CNEL

¹ L_{eq} is the equivalent steady-state sound level which, in a stated period, would contain the same acoustic energy as the actual time-varying sound level during the same period.

² CNEL, the Community Noise Equivalent Level, is based on human reaction to cumulative noise exposure over 24 hours. To calculate the CNEL, noise between 7:00 p.m. and 10:00 p.m. is weighted by adding approximately five dBA, and the noise between 10:00 p.m. and 7:00 a.m. is weighted by adding 10 dBA to take into account the greater annoyance of evening and nighttime noise.

INSERT FIGURE 4.10.1: NOISE SOURCES AND EFFECTS ON PEOPLE

is a 24-hour, "weighted" noise level which accounts for greater sensitivity of most people to evening and nighttime noise. The CNEL noise descriptor is commonly used in establishing noise exposure guidelines for specific land uses. In this report, noise levels reported in terms of L_{eq} or CNEL reflect "A-weighted" decibels (dBA).

Regional Setting

Noise is typically characterized as a local condition given the fact that noise generated by a particular source decays rapidly as distance from the source increases. Typically, noise levels in rural and sparsely populated areas away from major roads are below 40 CNEL. In comparison, noise levels in developed and highly urbanized areas and/or along busy roadways can reach 70 CNEL or more. In most areas, automobile and truck traffic are the major source of environmental noise. Traffic activity generally produces an average sound level that remains fairly constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Various noise sources are associated with utility operations including stationary sources, such as turbines, compressors and generators, cooling towers, and mobile sources, such as maintenance trucks.

Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies. Local regulation of noise involves implementation of General Plan policies and Noise Ordinance standards. Local General Plans identify general principles intended to guide and influence development plans, and Noise Ordinances set forth specific standards and procedures for addressing particular noise sources and activities. Each of the 12 power plants to be divested is governed by local or county ordinances.

General Plans recognize that different types of land uses have different sensitivities towards their noise environment; residential areas are generally considered to be the most sensitive type of land use for exposure to noise and industrial/commercial areas are generally considered to be the least sensitive. Figure 4.10.2 presents typical noise compatibility guidelines for a variety of land uses. Local noise ordinances typically set forth standards related to construction activities, nuisance-type noise sources, and industrial property-line noise levels.

Local Setting

The proposed divestiture project involves 12 Edison power plants in various locations throughout southern California. However, the existing acoustical environment for only those plants located within 0.5 mile of a potentially sensitive noise receptor are discussed here. Noise from plants located more than 0.5 mile from an existing or anticipated noise-sensitive land use (e.g., residences, schools, hospitals, and convalescence homes) would not be expected to affect such

INSERT FIGURE 4.10.2: LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

sensitive uses, and therefore are not discussed below. Power plants excluded on this basis include Cool Water, Etiwanda, Long Beach, Mandalay, and Ormond Beach.

Descriptions of the existing ambient conditions for the remaining eight power plants are presented below. Additionally, the applicable local regulations for the plants where noise is a potential issue is discussed. The types of operating units and power output are similar for many of the affected power plants; however, the plant layouts, the amount of noise abatement incorporated into the plant design, and the existing community noise environment are different at each plant, thereby precluding general classification of the existing noise environment around the plants.

Alamitos

The Alamitos power plant is located in the City of Long Beach. The closest residences are located approximately 300 feet west across Studebaker Road and Los Cerritos Channel, and approximately 500 feet north across State Route 22. Leisure World, a large senior citizen residential development is approximately one-quarter mile to the east. Adjacent land uses include Los Angeles Department of Water and Power's (LADWP's) Haynes power plant to the east across the San Gabriel River, commercial and residential to the north, residential to the northwest, and open space (oil field) to the south and southwest.

Past measurements of noise levels conducted for the City of Long Beach near the plant range from 44-49 dBA during the day to 44-47 dBA at night (ENTRIX, 1996). Other noise measurements in the vicinity of the project site at residences 1,000 feet west of the plant along Palo Verde Avenue registered 55 dBA in the afternoon (ENTRIX, 1996). Of the seven units at Alamitos, only Units 4 and 7 were operating during the measurement.

In the past, Edison has received and investigated several noise complaints in the areas near the site. Noise mitigation measures (e.g., construction of enclosures) undertaken by Edison in the mid-80s have caused a substantial reduction in noise levels from forced draft fans. Noise surveys undertaken by Edison and Wyle Laboratory after implementation of these noise abatement measures indicated that no additional noise mitigation would be required at the Alamitos plant to address community problems.

In general, noise generated by both the Haynes power plant and the Alamitos power plant is part of the normal background noise level in this area of Long Beach and are within the limits set by the City's noise ordinance. However, under certain weather conditions (i.e., the Santa Ana Winds) the plant noise is more audible than at any other time of the year.

The noise ordinance for the City of Long Beach states that noise levels at residential areas should not exceed an L_{eq} (equivalent energy level) of 50 dBA between the hours of 7:00 a.m. and 10:00 p.m. and 45 dBA from 10:00 p.m. to 7:00 a.m.

Sound measurements for the present study were made in the vicinity of the plant at the residential development 300 feet west of the plant. The location of the measurement was at the front property line of a dwelling unit on the west side of Studebaker Road and Los Cerritos Channel and at the east end of Marquinta Street. The sound level due to all sources as measured at this location in the daytime was 44 to 46 dBA. The dwelling unit adjacent to the location is a single story residence with brick and siding exterior, and backed up to Los Cerritos Channel; an eight foot high block wall extends along the rear property line.

A second daytime measurement in the vicinity of the plant was taken at College Park Drive and Salida Avenue, north of the plant and State Route 22. The steady sound level due to all sources was approximately 58 dBA. The adjacent dwelling to this location is a single story residence with stucco exterior, a gable roof, and a five to six foot high block wall shielding the rear yard.

On the day of the current sound measurements, the plant noise included a distinct buzzing which was audible at the plant gate and parking area, and was due to vapor extraction equipment (Robey, 1997). One plant unit, that is unit 5, was operating on that day. The typical operating condition is to have two units in operation, that is either Unit 5 or Unit 6, and one of the smaller units (Perry, 1997).

El Segundo

The El Segundo power plant is located west of Vista del Mar in the City of El Segundo. The Pacific Ocean is west of the plant, the Chevron Oil Company refinery is located to the east; and the Los Angeles steam facility is located to the north. Multi-family homes are approximately 2,000 feet south of the closest power generating unit. The plant has four generating units. The noise of one operating unit was not audible at the closest multi-family home to the south.

The ambient noise in the residential areas is primarily made up of traffic noise and the ocean surf. The City of El Segundo General Plan Noise Element Existing Conditions Report does not identify the El Segundo power plant as a significant noise source within the city (ENTRIX, 1996). This power plant is not a significant noise source during the day and would not be expected to be a significant source at night.

The new draft noise ordinance for the City of El Segundo states that noise levels caused by a source should not exceed 5 dBA above the ambient noise levels at residential property lines.

Ellwood

The Ellwood power plant is located at Los Armas Road in Goleta, an unincorporated area of Santa Barbara County. Adjacent land uses include a school approximately 200 feet to the east, a golf course to the west and southwest, residential areas 500 feet to the north across Highway 101, and residential areas 1,000 feet to the east and southeast.

According to the noise level map in the Final Goleta Community Plan, existing noise levels in adjacent areas north of the project site are within the 65-69 dBA range, and they increase as one gets closer to the Southern Pacific Railroad tracks and Highway 101 reaching the 70-74 dBA range (ENTRIX, 1996). As one moves away from these sources towards the project site and southbound, the noise levels decrease. Areas to the south, east, and west of the plant site experience noise levels within 60-64 dBA range. Due to air emission restrictions, this plant is limited to 200 hours of operation per year; therefore, the noise generated by this plant affecting the nearby sensitive uses is limited. Prevailing noise sources in the area include traffic on Highway 101 and the railroad track; therefore, any noise generated by the plant would be generally exceeded by noise from these sources.

The County of Santa Barbara has established criteria for noise exposure that require interior noise levels within residential dwelling units to fall below 45 dBA and exterior living areas be designed to keep noise exposure levels below 65 dBA.

Highgrove

The Highgrove power plant is located at Taylor Street in the City of Grand Terrace, San Bernardino County. Adjacent land uses are mostly industrial and commercial. On the west side of the plant are the Union Pacific and Atchison, Topeka, and Santa Fe railroad tracks. Interstate 215 is located 1,000 feet to the west. The closest sensitive receptors are low-density residential areas located approximately 1,000 feet to the east and southeast of the generating plant.

Past ambient noise measurements undertaken near the closest residential areas registered an average noise level of 50 dBA (ENTRIX, 1996). This noise was primarily generated by the surrounding industrial activities and distant traffic. When the plant is operating at full capacity, the noise levels are predicted to be approximately 50-55 dBA Leq at the closest residential areas. The plant is currently not active, however, and historically has been operated only during peak electrical demand periods during daytime hours, an average of 1 day per year. This level of operation results in limited community noise.

The City of Grand Terrace noise ordinance defines intrusive noise in subjective and qualitative terms, and specific noise levels are not provided. However, the County of San Bernardino has established the following hourly noise level performance standards for stationary sources at residential or other noise-sensitive receivers: from 7 a.m. to 10 p.m., 55 Leq dBA; and from 10 p.m. to 7 a.m., 45 Leq dBA.

Huntington Beach

The Huntington Beach power plant is located along the Pacific Coast Highway in the City of Huntington Beach. Adjacent uses include commercial to the north, open space to the northeast, and southeast, and an open space recreational area to the south. The closest residences are 200 feet west of the power plant and 200 feet east of the fuel oil storage tanks.

Data available from Huntington Beach noise monitoring stations indicate that the noise level in the power plant locale is approximately 65 dBA Ldn (ENTRIX, 1996). Other noise monitoring data indicate that the noise level at the Huntington-by-the-Sea mobile home park across Newland Street was approximately 50 dBA and was generated by traffic on Newland Street and the Pacific Coast Highway. The plant-generated noise level at the mobile home park was approximately 48 dBA (ENTRIX, 1996).

The City of Huntington Beach considers daytime noise levels of up to 55-dBA Leq and nighttime noise levels of up to 50-dBA Leq to be compatible with residential land use.

In the current study conducted in August 1997, a daytime sound measurement was taken on the plant site, yielding a value of 58 dBA at an interior fence adjacent to open space on the northeast side of the main plant buildings. On the measurement day, Unit 1 was operating, which represents a typical condition (Best, 1997).

In the plant neighborhood, current sound measurements were taken at the nearest property line of the Huntington-by-the-Sea mobile home and trailer park west of the plant and Newland Street; the daytime measured noise level there was 58 dBA, due to a combination of highway and plant noise. This location was shielded to some extent visually and acoustically by a berm at the plant boundary.

A second daytime sound measurement in the neighborhood was made for the current study on the north side of Hamilton Avenue and west side of Seaforth Lane, north of the site. There are commercial buildings intervening between the plant and this measurement location. The measurement yielded a value of 48 dBA due to all sources. The adjacent single family dwelling is single story with stucco exterior and gable roof and with a block wall along the rear line adjacent to Hamilton Avenue.

A third neighborhood sound measurement for the current study was made in the daytime on the northeast corner at Hula Circle and Christine Drive, northeast of the plant; some degree of shielding for plant noise was provided by dwellings on the south and west sides of the streets. The sound level due to all sources was measured at 47 dBA. Adjacent single dwellings are typically single story with stucco or brick-and-siding exterior with a gable roof and chimney.

Redondo

The Redondo power plant is located on Harbor Drive in the City of Redondo Beach. Current adjacent land uses include King Harbor Marina 0.5 mile to the west across Harbor Drive; residential to the north and east; public beach to the northwest; and light industrial and commercial to the north, east, and south. The closest residences are located across Herondo Street approximately 50 feet north of the plant fenceline. Other residences in the plant vicinity are located on the easterly side of Catalina Avenue east of the plant, including a tri-level condominium facility with stucco exterior, and two wood frame one story single dwellings which are

approximately 50 years old. These residences are exposed to various noise sources including an automobile repair shop. There is a ten foot high sound wall along the north site boundary adjacent to Herondo Street.

Most background noise in Redondo Beach is created by traffic on major arterials and freeways. Typical traffic noise registers between 57 and 64 dBA. Traffic noise on the Pacific Coast Highway has been as high as 75-80 dBA. Other factors contributing to the noise level are horns, sirens, loud radios, and air traffic. The Redondo power plant is also a recognized source of noise in the Redondo Beach area.

An existing profile of the noise environment for the Redondo power plant has been developed through field measurements, research, and interpolation of measured noise exposure levels (ENTRIX, 1996). Identifying individual noise sources from measured data is difficult. Based on these data, monitored noise levels along the eastern perimeter of the site ranges between 54 to 62 dBA. In general, the power plant noise becomes dominant during periods of low traffic volumes or when moving to side streets not blocked from view of the plant. A noise measurement was taken on December of 1989 along Herondo Street. According to this measurement, the noise level from both traffic and the plant noise sources was 64 dBA Leq and the plant noise alone was approximately 56 dBA Leq.

The City of Redondo Beach General Plan noise element, as revised, includes policies specifically addressing stationary noise impacts of the Redondo power plant. These policies seek to include the installation of additional noise buffering or reduction elements in and around the plant and the intensification of maintenance efforts within the plant to lessen impacts of both normal frequency and low frequency noise from stationary sources.

In addition, the Noise Element of the City of Redondo Beach General Plan also establishes acceptable noise levels for various land uses, with emphasis on requirements for residential areas and those containing the most sensitive noise receptors, such as hospitals and schools. Under Chapter 24 of the Municipal Code, the city has established a night-time noise standard of 50 dBA and a daytime noise standard of 55 dBA for residential areas of the community.

There has been a history over some years of noise complaints, response, city enforcement action, monitoring and mitigation involving noise affecting the residences to the east of the plant (Robey, 1997). Mitigation measures, which have been applied primarily to Unit 7, or Units 7 and 8, have included: enclosures for parts of the turbine generator area and for the forced draft fans; sound walls; fan silencers; motor silencers; insulation of ductwork; pump and exciter enclosures; installation of a new auxiliary steam valve, and mitigation for gas valves. A criterion level of 64 dBA at the plant east property line has been proposed and used by Edison to predict compliance with the city noise ordinance at the residential facilities to the east.

Information provided in a chronology by Edison (Robey, 1997) indicated that as of 1991 "The only distinguishable property line noise source (that is in the context of those affecting receptors to the east), unit 7 auxiliary steam valves, is mitigated." In the chronology, the last item referring to enforcement action states, for 1992, "The trial ended August 1992, in a dismissal of the charges due to a lack of evidence. The court's ruling implied that the noise ordinance was too difficult to interpret and enforce and should be revised." Subsequent mitigation activities have included Safety Relief Valve Silencers, Auxiliary Steam quiet valves, fan active noise cancellation and SCR blower noise enclosures.

For the current study, a daytime sound measurement was made in the vicinity of the plant at the nearest dwellings, that is on the north side of Herondo Street at Monterey Boulevard. The sound level was measured at approximately 51 dBA steady level due to traffic and plant sources. The adjacent residential building is a three story apartment building with stucco exterior. Generating units 5, 6, 7, and 8 were operating on the day of the sound measurements.

San Bernardino

The San Bernardino power plant is a 90.5-acre site on San Bernardino Avenue in the County of San Bernardino. The northern property line of the site is adjacent to the Santa Ana River, and the eastern property line is next to an open field. Norton Air Force Base is located north of the plant. The residential areas closest to the plant are the houses on the western side of Mountain View Avenue, opposite the plant. These homes are the most sensitive noise receptors in the vicinity of the plant. The major noise sources in the area are Norton Air Force Base, the power plant, and the local traffic on Mountain View Avenue.

According to property line and community noise measurements conducted at San Bernardino power plant (ENTRIX, 1996), noise levels at the nearest residences range from 64 to 67 dBA during daytime and from 59 to 62 dBA during the nighttime, when the plant is in operation. This plant is currently inactive, however, and has historically been operated for 1-2 months each year during the peak demand period in summer.

According to the County of San Bernardino ordinance, noise levels in residential areas are not to exceed 55-dBA Leq from 7:00 a.m. to 10:00 p.m. or 45-dBA Leq from 10:00 p.m. to 7:00 a.m. The City of San Bernardino has a revised noise ordinance that calls for noise levels at the nearest residential receiver not to exceed 50 dBA at nighttime.

CHECKLIST ISSUES

a) Increases in Existing Noise Levels

An important part of a noise analysis is the identification of noise-sensitive land uses that may be affected by a project. This would include any residential properties, schools, or other noise-

sensitive land uses adjacent to the project. As described under "Setting" above, seven of the twelve power plants are located near a number of residential areas and other noise-sensitive land uses.

As a general rule, noise produced by a single generating unit varies only slightly when operated at different load levels, meaning that a unit operating at 25%, 50% or 100% of its maximum capacity would result in similar noise levels (Pacific Gas and Electric, 1996). The plants would have a tendency to operate at a higher capacity under new ownership. As a result, although noise levels from a single operating unit are not expected to increase during increased plant operations, individual units may operate more often, or the frequency of multiple units in operation simultaneously could increase, which would increase the overall noise environment near the plants to some degree. As mentioned previously in this section, this would not be an impact at the power plants where no noise-sensitive receptors are located within one-half mile of the plants (Cool Water, Etiwanda, Long Beach, Mandalay, and Ormond Beach).

Night is the most sensitive time for noise effects. The expected result of potential increases in generation would be that multiple units are operated at night (two units would be expected to produce a noise level about 3 dBA higher than one unit). However, current information indicates that, sometimes, multiple boilers are frequently left on at night, but at a somewhat lower capacity than during the daytime (which does not affect the noise levels). Steam boilers are generally started during daytime hours; nighttime start-ups are not expected as a reasonably foreseeable consequence of divestiture (Weatherwax, 1997). In as much as multiple units are typically operated at night under existing conditions without identified noise impacts and within the applicable noise ordinance criteria, the operation of multiple units at night under divestiture would not constitute a significant impact. If multiple units operating at night operated at higher capacity, this would also not be significant because (as discussed earlier) noise produced by a single unit is fairly constant over a range of loads.

Additionally, the transfer of ownership may require relatively minor construction, which would likely be limited to activities necessary to separate the divested generating units from on-site transmission and distribution equipment, ownership of which would be retained by Edison. New construction may generate noise levels that are unacceptable to noise-sensitive land uses. However, such noise is anticipated to be short-term, would occur during the daytime and would cease at the completion of the minor construction activities. Construction activities would be subject to specific requirements in local noise ordinances. Therefore, potential construction impacts would not create significant effects on sensitive receptors in the vicinity of the power plants.

Conclusion

Increased operations resulting from the project could result in relatively small noise level increases at some locations; these would not be significant. Accordingly, mitigation measures are not required to be incorporated into the project.

b) Exposure to Severe Noise

The project would not expose people to severe noise levels at any of the 12 power plants to be divested and their vicinity. "Severe" noise levels are generally regarded as those levels that can produce hearing damage or other health effects. Typically, severe noise levels are associated with such activities as pile driving, blasting, or military jet operations. The project would not result in the types of activities that would produce severe noise levels.

Based on past ambient noise measurements near Edison's power plants, noise levels emitted by these power plants operating at full capacity were found to be approximately 50-55 dBA L_{eq} at about 1,000 feet (Southern California Edison, 1996). These noise levels are acceptable to sensitive receptors in the area.

On occasion, automatic safety relief valves that are installed on boilers at the power plants are activated resulting in a high-pitched whistling sound that last for a short period of time. If operations at the power plants increase from divestiture, the frequency of these releases may increase. However, this would not be a constant occurrence and would not be anticipated to expose sensitive receptors to severe noise levels.

Conclusion

Although the project could increase the occasional occurrence of automatic safety valve releases, because these occurrences would continue to be rare, this impact would be considered less than significant.