5.12 Traffic and Transportation

This section addresses the potential effects of the Redondo Beach Energy Center Project (RBEP) on traffic and transportation. Section 5.12.1 describes the project setting and affected environment of the local and regional traffic and transportation routes surrounding the project site. Section 5.12.2 presents the environmental analysis of the project's effects on local traffic volumes and patterns. Section 5.12.3 evaluates potential cumulative effects on traffic and transportation due to other simultaneous projects. Section 5.12.4 describes mitigation measures for the project. Section 5.12.5 describes applicable laws, ordinances, regulations, and standards (LORS). Section 5.12.6 lists the applicable regulatory agencies and contacts. Section 5.12.7 discusses traffic and transportation permits required, and Section 5.12.8 lists the references used to prepare this section.

5.12.1 Setting and Affected Environment

RBEP is a 496-megawatt[1] natural-gas-fired power plant, consisting of one 3-on-1 combined-cycle gas turbine power block. The power block includes three combustion turbine generators (CTG), three supplemental-fired heat recovery steam generators (HRSG), one steam turbine generator, an air-cooled condenser, and related ancillary equipment. RBEP will be constructed entirely within the existing approximately 50-acre Redondo Beach Generating Station site in Redondo Beach, California. The project will use the existing onsite potable water, natural gas, stormwater, process wastewater, and sanitary pipelines and electrical transmission facilities. No offsite linear developments are proposed as part of the project.

RBEP will use potable water, provided by the California Water Service Company, for construction water and for operational process and sanitary uses. During RBEP operation, stormwater and process wastewater will be discharged to a retention basin and then ultimately to the Pacific Ocean via an existing permitted outfall. Sanitary wastewater will be conveyed to the Los Angeles County Sanitation District via the existing City of Redondo Beach sewer connection. A new onsite 230–kilovolt (kV) transmission interconnection will connect the RBEP power block to the existing onsite Southern California Edison (SCE) 230-kV switchyard.

Construction and demolition activities at the project site are anticipated to last 60 months, from January 2016 until December 2020. The first activities to occur on site will be the dismantling and partial removal of existing Units 1–4. The major generating equipment including steam turbines, generators, boilers, and duct work will be removed, leaving the administration building and western portion of the building that houses Units 1–4 intact. These buildings will be left standing temporarily to provide screening between the construction site of the new power block and Harbor Drive. Construction of the new power block will begin in the first quarter of 2017 and continue through to the end of the second quarter 2019, when it will be ready for commercial operation. Although operational, construction will continue through 2019 including construction of the new control building and the relocation of the Wyland Whaling Wall. The existing Units 5–8 and auxiliary boiler no. 17 will remain in service until the second quarter of 2018. Units 5–8 and auxiliary boiler no. 17 will be demolished starting the first quarter of 2019 through the fourth quarter of 2020. During the demolition and removal of Units 5–8, the Wyland Whaling Wall will be dismantled and moved to a new location directly in front of the new power block. Finally, the remaining buildings and structures left standing will be demolished and removed by the end of 2020.

All laydown and construction parking areas will be located within the existing Redondo Beach Generating Station fence line, as shown in Figure 2.1-1. Approximately 17 acres onsite will be used for construction laydown and parking. All construction equipment and supplies will be trucked directly to the site.

Primary access to the project site will be provided via an existing entrance off of North Harbor Drive, just south of the intersection of Herondo Street and North Harbor Drive.

5.12.1.1 Existing Regional and Local Transportation Facilities

Roadway descriptions and volumes were obtained from the best available sources at the time this analysis was prepared. These sources include the California Department of Transportation (Caltrans) Traffic Data Branch

[1] Referenced to site ambient average temperature (SAAT) conditions of 63.3°F dry bulb and 58.5°F wet bulb temperature.

Average Daily Traffic Volumes, Redondo Beach Circulation Element (City of Redondo Beach, 2009), Heart of the City Specific Plan—Circulation and Transportation Plan (City of Redondo Beach, 2010), the Traffic Study for the Harbor and Pier Zoning Amendments (Fehr and Peers, 2010), and the City of Redondo Beach Traffic Volumes (City of Redondo Beach, 2008).

The surrounding regional and local roadway networks are shown in Figures 5.12-1 and 5.12-2. Regional access to the RBEP site is provided from State Route 1 (SR 1)/Pacific Coast Highway (PCH), Interstate 110 (I-110) and I-405. Local access to the project site is primarily provided from Hawthorne Boulevard (SR 107), West 190th Street, Herondo Street/Anita Street, Catalina Avenue, and Torrance Boulevard. Construction workers, construction materials, and RBEP employees (for operations) traveling to the RBEP site are anticipated to use the roadways described below.

I-405 is a major north–south interstate highway, running along the western and southern parts of the greater Los Angeles area from Irvine in the south to near San Fernando in the north. I-405 is heavily traveled by commuters and freight haulers along its entire length. Traffic volumes along I-405 between South Western Avenue and Hawthorne Boulevard average between 245,000 and 260,000 vehicles per day (Caltrans, Traffic Data Branch, 2012).

I-110/ SR 110, is a state and interstate highway in the Los Angeles area. The interstate portion of I-110 (which ends at I-10), as well as SR 110 south of the US 101 interchange is the Harbor Freeway. The segment of SR 110 north from US 101 to Pasadena is the historic Arroyo Seco Parkway. SR 110/I-110 connects San Pedro and the Port of Los Angeles with downtown Los Angeles and Pasadena. The Long Beach freeway (I-710) is the principal means for freight to get from the Port of Los Angeles to rail yards and warehouses further inland, but I-110 is also a major freight route. Daily traffic volumes on I-110 near its interchange with I-405 average between 218,000 and 263,000 vehicles per day (Caltrans, Traffic Data Branch, 2012).

PCH connects to I-5 in Dana Point, and to cities and counties along the Pacific coast to the north. In the vicinity of the project, PCH is a four-lane north-south major arterial. Left-turn lanes are provided at major intersections and travel speeds are characteristic of commercial corridors. The speed limit along PCH near the project site is 35 miles per hour (mph). There is a raised median south of Avenue H that continues to Neece Avenue. Traffic volumes along PCH average from 26,500 to 59,000 vehicles per day (Caltrans, Traffic Data Branch, 2012).

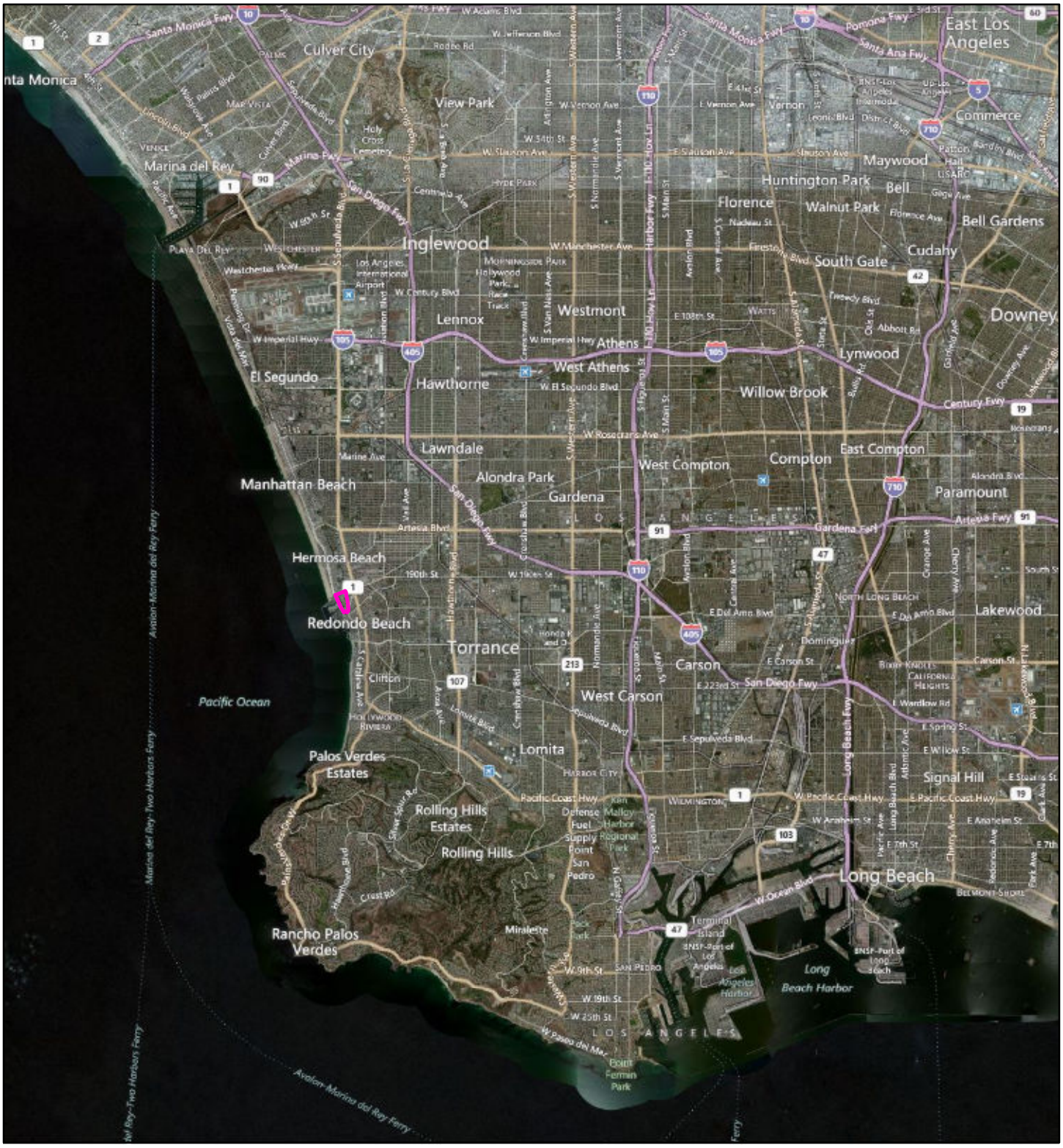
Herondo Street is a four-lane east-west secondary arterial that connects Harbor Drive to PCH. Herondo Street becomes Anita Street to the east. There is a raised median along the entire section of Herondo Street, with left turn lanes at all major intersections. The speed limit along Herondo Street is 35 mph. Traffic volumes along Herondo Street average 11,000 vehicles per day (City of Redondo Beach, 2008).

Anita Street/West 190th Street is a four-lane east-west major arterial that connects PCH to Hawthorne Boulevard and destinations to the east. Traffic volumes along Anita Street/West 190th Street average from 22,150 to 40,280 vehicles per day (City of Redondo Beach, 2008).

Catalina Avenue is a four-lane north-south secondary arterial that runs from Herondo Street near the northern city boundary to Palos Verde Boulevard at the southern city boundary. There is a raised median between Beryl Street and Torrance Boulevard. Catalina Avenue carries between 9,370 and 22,600 vehicles per day (City of Redondo Beach, 2008).

Beryl Street is a southeast-northeast secondary arterial running between Harbor Drive and West 190th Street. Between Prospect Street and Catalina Street, Beryl Street has one lane in each direction with a two-way left-turn lane. Beryl Street carries between 4,810 and 6,220 vehicles per day (City of Redondo Beach, 2008).

Harbor Drive is a two-lane north-south collector within the city of Redondo Beach and a four-lane arterial within the city of Hermosa Beach (where it is called Hermosa Avenue). Harbor Drive terminates at Pacific Avenue approximately 0.5 mile to the south of the project site. Hermosa Avenue terminates at 35th Street approximately 1.75 miles north of the project site. Within the city of Redondo Beach there is a two-way left-turn lane and a 5-foot bike lane on both sides of the street. Within the city of Hermosa Beach, on-street bike sharrows are provided. Within the city of Redondo Beach, Harbor Drive carries an average of 10,170 vehicles per day (City of Redondo Beach, 2008).



Sources:
Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap

Legend

Project Location

N

0 1.5 3 6 Miles

FIGURE 5.12-1
Regional Road Network
AES Redondo Beach Energy Project
Redondo Beach, California

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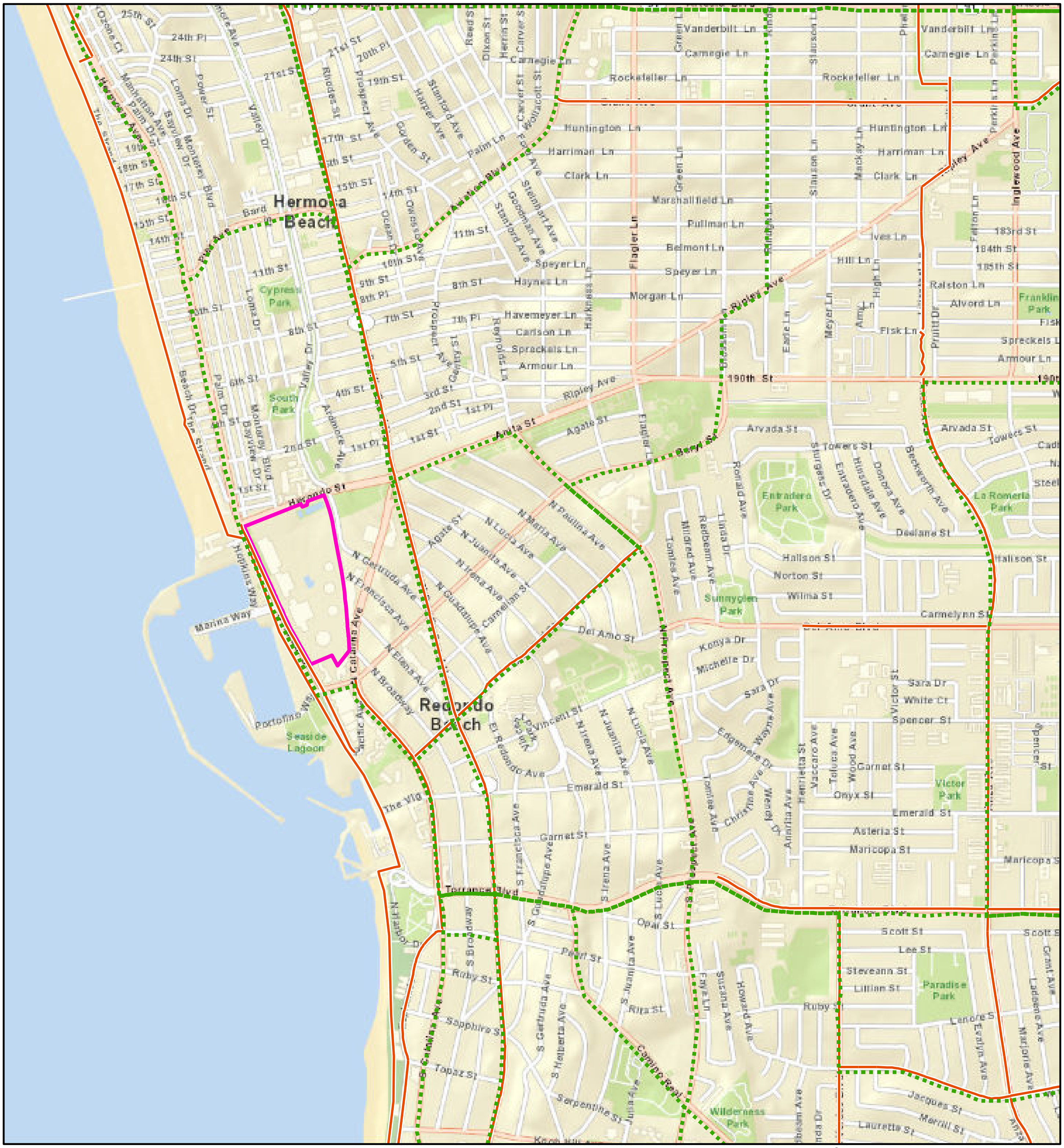

Sources:
Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap
Caltrans (2001).

Legend

- Bus Route
- Bikeway
- Project Location

N

0 1,000 2,000 Feet

FIGURE 5.12-2
Local Transportation Network
AES Redondo Beach Energy Project
Redondo Beach, California

CH2MHILL

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Hawthorne Boulevard/SR 107 is a six- to eight-lane north-south divided roadway that connects Palos Verdes Drive in Rancho Palos Verdes in the south to I-405 and destinations to the north. Hawthorne Boulevard is identified in the City of Torrance General Plan as a principal arterial. There are left-turn lanes at all major intersections. Traffic volumes along Hawthorne Boulevard average 65,700 vehicles per day between Artesia Boulevard to the north and 177th Street to the south (City of Redondo Beach, 2008).

Torrance Boulevard is a four-lane east-west major arterial than ends in a cul-de-sac west of Catalina Avenue, less than 1 mile from the project site. Torrance Boulevard is one of the primary connections between I-110 to the east and the cities of Torrance and Redondo Beach to the west. Traffic volumes along Torrance Boulevard average from 13,000 to 22,200 vehicles per day in the vicinity of the project site (City of Redondo Beach, 2008).

5.12.1.2 Heavy/Oversized Loads Haul Route

Large and heavy components of the electrical generator sets for RBEP (CTGs, components of the HRSGs, transformers, and other oversize and heavy components) will be transported by ship or rail to the Port of Long Beach. From the port, these loads will be transported to the site by truck (with appropriate heavy/oversize permits from the agencies listed in Table 5.12-1 below) along the heavy haul route shown on Figure 5.12-3 to the onsite construction laydown area.

For RBEP construction, the heavy/oversize loads are expected to be permitted for late night deliveries. Late night transport of heavy/oversize loads is common practice to minimize conflicts with general traffic. The volume of these heavy/oversize trips for RBEP (and the background traffic in late-night hours) will be low enough (a maximum of three deliveries per month for six months) that a traffic operations analysis was not conducted for the heavy/oversize loads transport activities. These truck deliveries are expected to have a negligible effect on operations and roadway level of service (LOS).

An initial heavy haul route is provided in Table 5.12-1, as well as the anticipated permitting agency for each road section. A full description of the route is provided in Appendix 5.12A. However, the final route will be determined when the heavy/oversize load permits are submitted to the appropriate jurisdictions.

TABLE 5.12-1
Heavy Haul Route (Port of Long Beach to RBEP Site)

Heavy Haul Route- Road Segment	Permitting Agency
Harbor Plaza to Pico Avenue	City of Long Beach/County of Los Angeles[a]
Pico Avenue to West 10th Street	City of Long Beach/County of Los Angeles[a]
10th Street changes to 9th Street	City of Long Beach/County of Los Angeles[a]
9th Street to Santa Fe Avenue	City of Long Beach/County of Los Angeles[a]
Santa Fe Avenue to PCH	City of Long Beach/County of Los Angeles[a]
PCH to North Avalon Boulevard	Caltrans
North Avalon Boulevard to 223rd Street	County of Los Angeles[b]
223rd Street to South Vermont Avenue	County of Los Angeles[b]
South Vermont Avenue to Torrance Boulevard	County of Los Angeles[b]
Torrance Boulevard to Normandie Avenue	County of Los Angeles[b]
Normandie Avenue to West 190th Street	City of Los Angeles[c]
West 190th Street to Prairie Avenue	City of Los Angeles/City of Torrance[c]
Madrona Avenue/Prairie Avenue to Torrance Boulevard	City of Torrance[c]

TABLE 5.12-1
Heavy Haul Route (Port of Long Beach to RBEP Site)

Heavy Haul Route- Road Segment	Permitting Agency
Torrance Boulevard to Catalina Avenue	City of Redondo Beach/City of Torrance[c]
Catalina Avenue to Beryl Street	City of Redondo Beach[c]
Beryl Street to Harbor Drive	City of Redondo Beach[c]

[a]Within the Overweight Corridor/Harbor District of the City of Long Beach, the City of Long Beach Department of Public Works is responsible for the issuance of permits for the operation of overweight vehicles carrying reducible loads and the Los Angeles County Department of Public Works is responsible for issuing permits for the transportation of non-reducible loads. Should the project have both reducible and non-reducible loads, a permit from both agencies would be required.
[b]The Los Angeles County Department of Public Works (DPW) issues permits for some incorporated cities within Los Angeles County, including these streets located within the City of Carson.
[C]The Cities of Los Angeles, Torrance, and Redondo Beach issue their own oversize/overweight permits.

In Redondo Beach, a portion of the heavy vehicle route would deviate from the heavy vehicle routes identified in the City of Redondo Beach Municipal Code (2012). This includes the section of Torrance Boulevard between the PCH and Catalina Avenue; Catalina Avenue between Torrance Boulevard and Beryl Street; Beryl Street between Catalina Avenue and Harbor Drive; and Harbor Drive to the project entrance. A provision in the City Municipal Code (Title 3, Chapter 7, Article 9) allows trucks to continue along non-designated routes if they are going directly to a business for deliveries/pickups (that is, not travelling through). Construction access will be from the existing driveway on Harbor Drive.

5.12.1.3 Existing Roadway and Intersection Operations

The traffic analysis for RBEP was conducted according to the methodologies and procedures outlined in the *Highway Capacity Manual* (HCM) (Transportation Research Board, 2000), and applicable provisions from the California Environmental Quality Act (CEQA). Average daily traffic (ADT) volumes were used to assess the LOS for the study area local streets and afternoon peak-hour turning movement counts were used to assess intersection LOS.

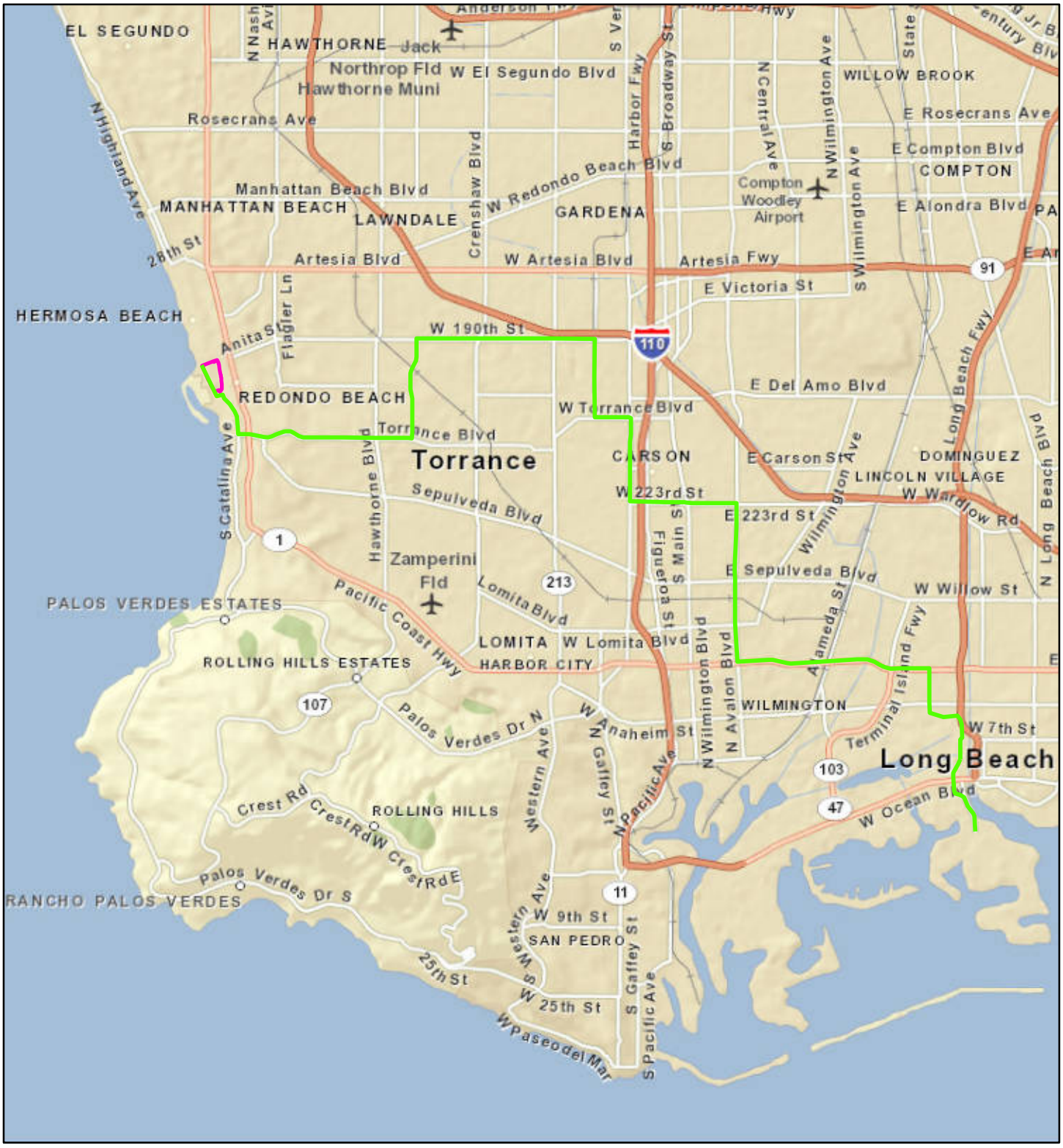
5.12.1.3.1 Existing Roadway Conditions

Table 5.12-2 is a summary of traffic flow characteristics for LOS at intersections in Redondo Beach. For the study area intersections, the LOS was calculated based on seconds of delay, as summarized below.

TABLE 5.12-2
Level of Service Criteria for Intersection Operations

	Delay per Vehicle (Seconds)		
LOS	Signalized	Un-Signalized	Traffic Flow Characteristics
A	≤ 10.0	≤10.0	insignificant delays
B	>10.0 and ≤20.0	>10.0 and ≤15.0	Stable operation; minimal delays
C	>20.0 and ≤35.0	>15.0 and ≤25.0	Stable operation; acceptable delays
D	>35.0 and ≤55.0	>25.0 and ≤35.0	Below average operating conditions. Drivers may wait more than one cycle to proceed through an intersection.
E	>55.0 and ≤80.0	>35.0 and ≤50.0	"At-capacity"
F	>80.0	>50.0	Jammed conditions

Source: Transportation Research Board, 2000



Sources:
Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap

Legend

- Project Location
- Long Beach Route

N

0 1 2 4 Miles

FIGURE 5.12-3
Heavy Haul Route
AES Redondo Beach Energy Project
Redondo Beach, California

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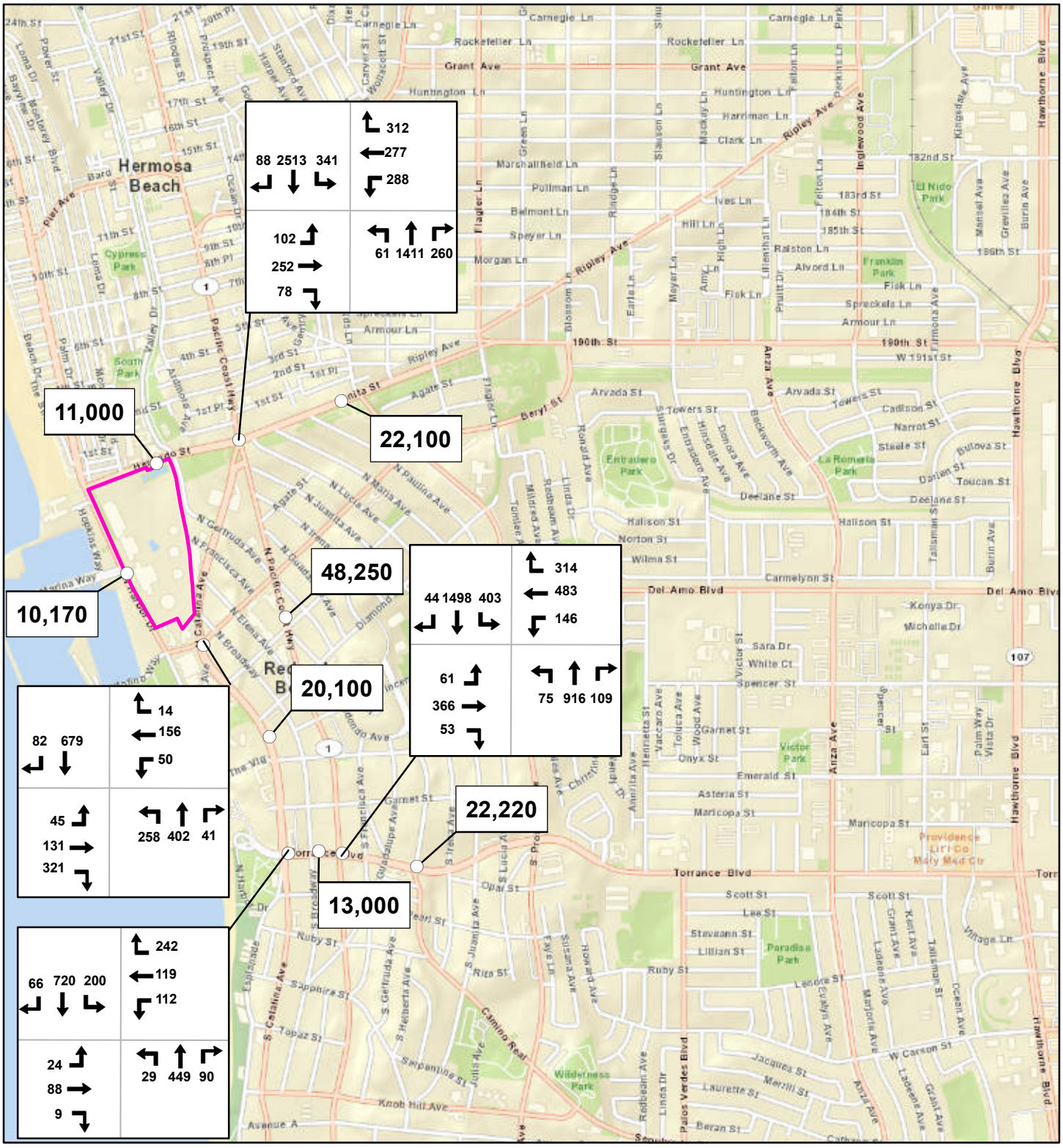

Sources:
Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap

Legend

- Study Roadway/Intersection
- Project Location
- XX Average Daily Traffic
- PM Peak Hour Turning Movement

N

0 1,000 2,000 Feet

FIGURE 5.12-4
Existing Roadway ADT and PM Peak Hour Intersection Volumes
AES Redondo Beach Energy Project
Redondo Beach, California

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For the study area roadways, the LOS was calculated using a volume/capacity (V/C) ratio. Table 5.12-3 is a summary of V/C ratios for multi-lane highway and local roadway segments.

TABLE 5.12-3
Level of Service Criteria for Multi-lane Highway and Local Roadway Segments

LOS	V/C Ratio	Traffic Flow Characteristics
A	0.000 – 0.600	Free flow; insignificant delays
B	0.601 – 0.700	Stable operation; minimal delays
C	0.701 – 0.800	Stable operation; acceptable delays
D	0.801 – 0.900	Approaching unstable flow; queues develop rapidly but no excessive delays
E	0.901 – 1.000	Unstable operation; significant delays
F	> 1.000	Forced flow; jammed conditions

Source: Transportation Research Board, 2000.

The City of Redondo Beach has established a service standard of LOS D or better for all major, secondary, and collector streets, LOS C for local streets, and LOS E for state highways, such as PCH (City of Redondo Beach, 2008). The City has a goal for city intersections to operate at LOS D or better. Where intersections currently exceed LOS D, the City will pursue mitigation measures to achieve LOS D. If LOS D is not achievable at an intersection under existing baseline conditions with feasible mitigation, the LOS standard for the intersection will be equal to the 2007/2008 intersection LOS (City of Redondo Beach, 2009).

Based on the Caltrans (2002) *Guide for the Preparation of Traffic Impact Studies*, "Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on state highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the target LOS. If an existing State highway facility is operating at less than the appropriate target LOS, the existing LOS should be maintained." In addition, the proposed project may be deemed to have a significant transportation/ circulation effect if it will result in a safety hazard to pedestrians or motorists.

5.12.1.3.2 Existing Roadway LOS

ADT volumes were obtained from Caltrans (Caltrans Traffic Data Branch, 2010), the *Traffic Study for the Harbor and Pier Zoning Amendments* (Fehr and Peers, 2010) and from the City of Redondo Beach Traffic Volumes (City of Redondo Beach, 2008). The traffic counts for PCH were collected by Caltrans in 2010 and the traffic counts for the remaining study roadways were collected in the spring of 2007. Consistent with the methodology used for the *Traffic Study for the Harbor and Pier Zoning Amendments,* Caltrans traffic data from 2007 were compared to the 2010 vehicle volumes along highways near the project site. The 2010 volumes were found to be similar to or less than vehicle volumes in 2007. This finding was expected based on economic conditions in that period. For the analysis, no growth rate was applied to the 2007 ADT or turning movement counts. The existing roadway ADT is illustrated on Figure 5.12-4.

The capacities used to evaluate the roadways within the vicinity of the project site are based on a review of the City of Redondo Beach's designated functional classification and general application of the 2000 Highway Capacity Manual criteria (Transportation Research Board, 2000). Table 5.12-4 is a summary of the daily traffic volumes and V/C ratios for existing conditions on state and local facilities.

TABLE 5.12-4
Existing (2012) Roadway Segment LOS

Local Facilities	Between	And	Classification	Number of Lanes	Daily Vehicle Capacity[a]	Year 2012		
						ADT	V/C	LOS
PCH	Hawthorne Blvd.	Palo Verdes Blvd.	Major Arterial	4	45,000	35,500	0.789	C
	Palos Verdes Blvd.	Torrance Blvd.	Major Arterial	4	45,000	32,000	0.711	C
	Torrance Blvd.	Aviation Blvd.	Major Arterial	4	45,000	48,250	1.072	F
Herondo St.	Harbor St.	PCH	Secondary Arterial	4	36,000	11,000	0.306	A
Catalina Ave.	Topaz St.	Beryl St.	Secondary Arterial	4	36,000	20,100	0.558	A
	Beryl St.	PCH	Secondary Arterial	4	36,000	16,000	0.444	A
Anita St.	PCH	Harkness Ln.	Major Arterial	4	45,000	22,100	0.491	A
W. 190th St.	Eastern city limits	Prairie Avenue	Major Arterial	4	45,000	35,000[b]	0.778	C
Harbor Dr.	Beryl St.	Herondo St.	Collector	2	15,000	10,170	0.678	B
Hawthorne Blvd./ SR 107	Artesia Blvd.	182nd St.	Principal Arterial[c]	6	54,000	52,000	0.963	E
Torrance Blvd.	West terminus	PCH	Secondary Arterial	4	36,000	13,000	0.361	A
	PCH	Irena Ave.	Major Arterial	4	45,000	22,200	0.493	A

[a]The City of Redondo Beach Circulation Element provides capacity for Collector streets and a general statement regarding roadway capacities for Arterials. Specific capacities for Principal, Major, and Secondary Arterials were obtained from Austin-Foust Associates, Inc., 2009 and are based on standard industry practice. The ultimate capacity value is an estimate of the physical limit of daily traffic flows (LOS E) based on typical suburban peak hour characteristics. This value can vary significantly depending upon volume demand characteristics (volume of off-peak travel and duration of peak periods) as well as roadway design features (access, spacing, intersection geometrics, etc.).

[b]Existing ADT obtained from City of Torrance General Plan (2010). ADT ranged from 30,000 to 40,000.

[c]Designation obtained from the City of Torrance General Plan (2010).

5.12.1.3.3 Existing Intersection LOS

PM peak hour intersection turning movement counts were obtained from the *Traffic Study for the Harbor and Pier Zoning Amendments* (Fehr and Peers, 2010) for four intersections in the vicinity of the Project site. Along PCH, in the project study area, trucks comprise approximately 3 percent of the total vehicular traffic. The existing intersection turning movement counts are illustrated on Figure 5.12-4.

Only the PM peak hour has been analyzed, as this provides the most conservative traffic operations analysis. The existing intersection LOS is summarized in Table 5.12-5. As shown below, two of the four study intersections do not meet the City's LOS criterion.

TABLE 5.12-5
Existing (2012) Intersection LOS Summary

Intersection	Traffic Control Type	PM Peak Hour	
		Delay (seconds)	LOS
1. PCH/Anita Street/Herondo Street	Signal	69.6	E
2. Catalina Avenue/Beryl Street	Signal	18.9	B
3. Catalina Avenue/Torrance Boulevard	Signal	16.9	B
4. PCH/Torrance Boulevard	Signal	67.0	E

5.12.1.4 Truck Routes

The California Vehicle Code (CVC) Sections 35550–35559 regulates the use of trucks on state facilities, including PCH and SR 107. The City of Redondo Beach regulates the use of trucks on city roadways. Project-related trucks (construction, demolition, and operations) will travel along designated truck routes near the project site. The City's designated routes include the following:

- Artesia Boulevard within the city limits
- Aviation Boulevard within the city limits
- Compton Boulevard within the city limits
- Hawthorne Boulevard within the city limits
- Inglewood Avenue between Compton Boulevard and Artesia Boulevard
- Manhattan Beach Boulevard within the city limits
- PCH within the City limits; Redondo Beach Boulevard within the city limits
- Torrance Boulevard from the eastern boundary of the city to the PCH
- 190th/Anita Streets from Hawthorne Boulevard to PCH (subject to the provisions of Section 3-7.902(b))

In addition to the designated truck routes above, a heavy/oversize haul route for larger heavy haul trucks is shown in Figure 5.12-3 and discussed in Section 5.12.1.2. The heavy haul trucks will come from the Port of Long Beach directly to the construction laydown area at the project site. The anticipated permitting agency for each road section is also discussed in Section 5.12.1.2. See Appendix 5.12A, Heavy Haul Route, for details on heavy/oversize truck routes.

5.12.1.5 Regional and Local Transportation Projects

The South Bay Cities Council of Governments (SBCCOG) has completed development of its initial 5-year Measure R $176 million South Bay Highway Program (SBHP). Measure R, the half-percent sales tax approved by Los Angeles County voters in November 2008, dedicates more than $900 million during the next three decades for operational improvements to freeway and state highway networks in the South Bay. The initial SBCCOG-adopted Early Action and Strategic Positioning projects for Redondo Beach total $8,379,000 and include the following:

- PCH improvements from Anita Street to Palos Verdes Boulevard
- Aviation Boulevard at Artesia Boulevard intersection improvements
- PCH at Torrance Boulevard intersection improvements
- PCH at Palos Verdes Boulevard intersection improvements
- Inglewood Avenue at Manhattan Beach Boulevard intersection improvements

The Capital Improvement Program (CIP) for fiscal years 2012 through 2017 for the City of Redondo Beach includes the street improvement projects shown in Table 5.12-6. The construction schedule and funding status vary for each project.

TABLE 5.12-6
Capital Improvement Program for Fiscal Years 2012-2017 for the City of Redondo Beach

New Projects
Annual Roadway Maintenance
Aviation Boulevard Resurfacing – Manhattan Beach Boulevard to Marine Avenue
Beryl Street/190th Street Signal Study
Beryl Street Improvements – Flagler Lane to 190th Street
Carnelian Street/PCH Streetscape Improvements- Curb extensions on the north/south side of Carnelian Street east of PCH, bicycle parking facilities, parking improvements, and other improvements.
Citywide Curb Ramp Improvements
Citywide Pavement Management Survey
Grant Avenue Signal Improvements – Upgrade six traffic signals from Flagler Lane to Felton Lane. Synchronization, bike detection, signal replacement, video detection, adaptive signal coordination and wireless connection/integration into the Redondo Beach Traffic Management Center
Kingsdale Avenue Resurfacing – 182nd Street to Grant Avenue
Manhattan Beach Boulevard/Inglewood Avenue SB Right Turn Lane- Add southbound right turn lane at Inglewood Avenue
Marine Avenue Resurfacing – Aviation Boulevard. to I-405
Palos Verdes Boulevard / PCH WB Right Turn Lane- Add westbound right turn lane from Palos Verdes Boulevard to PCH.
PCH / Torrance Boulevard NB Right Turn Lane- Add northbound right turn lane from PCH to Torrance Boulevard
Preventive Maintenance – Alleys, Sidewalks, Curbs and Gutters
Residential Street Rehabilitation
Riviera Village Improvements – Design and implementation of high priority improvement projects identified by the Riviera Village Working Group.
Traffic Calming – Evaluate and install traffic calming devices, such as partial diverters, extended curbs, and raised intersections as appropriate.
Unfunded/ Underfunded Projects
California Coastal Trail/Strand Bike Path Improvements
Carnelian Street/PCH Streetscape Improvements
Catalina Street Corridor Beautification
Esplanade Resurfacing – Knob Hill Avenue to Catalina Avenue
Garnet Street/Catalina Avenue Accessible Pedestrian Signal
Grant Avenue Pedestrian Improvements
I-405 Freeway On/Off Ramp Landscaping
I-405 Freeway SB On Ramp at Inglewood Avenue
North Harbor Drive Cycle Track
North Redondo Beach Commercial Streets Improvements
Preventive Maintenance – Alleys, Sidewalks
Prospect Avenue Resurfacing – Beryl Street to Pearl Street
Residential Street Resurfacing

TABLE 5.12-6
Capital Improvement Program for Fiscal Years 2012-2017 for the City of Redondo Beach

Previously Funded Carryover Projects
190th Street Resurfacing – PCH to Prospect Avenue
Aviation Boulevard/Artesia Boulevard EB Right Turn Lane
Aviation Boulevard/Artesia Boulevard NB Right Turn Lane
Bus Bench and Shelter Replacement Program
Grant Avenue/Artesia Boulevard Countdown Pedestrian Signals
Harbor Drive Resurfacing – Beryl Street to Herondo Street
Manhattan Beach Boulevard Resurfacing – Redondo Beach Avenue to Inglewood Avenue
Manhattan Beach Boulevard/Inglewood Avenue EB Right Turn Arrow
North Redondo Beach Bikeway Lighting
PCH Study Recommendations (Implementation)
Target Community Improvements

5.12.1.6 Pedestrian and Bicycle Facilities

Bicycle facilities are typically categorized into three classes: Class I, Class II, and Class III. Class I facilities are bike paths or trails with an exclusive right-of-way (ROW) for bicycles separate from vehicles. Class II facilities are bike lanes with an exclusive ROW for bicycles designated by roadway striping and signs. Class III facilities are bike routes signed for shared travel with motorized vehicles, without any striping. In addition, a shared-lane marking or sharrow is a street marking placed in the center of a travel lane to indicate that a bicyclist may use the full travel lane. Near the project site, there is a Class I facility along The Strand (on the beach). There are Class II facilities along Grant Avenue, Harbor Drive, Diamond Street, and a portion of Catalina Avenue and Esplanade. There is a Class III facility on Esplanade, between Pearl Avenue and Knob Hill. There are sidewalks along both sides of most roadways in the city. Based on the current CIP, several bicycle and pedestrian improvement projects are planned at existing facilities around the city. See Figure 5.12-2 for designated bicycle routes in the vicinity of the project site.

5.12.1.7 Public Transportation

Transit service in Redondo Beach is provided by LA Metro, Beach Cities Transit, Torrance Transit, and LADOT Transit Services. Routes operating near the project site include LA Metro 130 and 232, Beach Cities Transit 109 and 102, Torrance Transit T3 and T7, and LADOT Commuter Express 438. See Figure 5.12-2 for the bus routes in the vicinity of the project site.

5.12.1.8 Rail Traffic

The nearest passenger rail service is approximately 3.25 miles northeast of the project site, at the Metro Rail Redondo Beach Station. Commercial rail service in the area consists of the Burlington Northern Santa Fe Railroad.

5.12.1.9 Air Traffic

Federal Aviation Administration (FAA) Regulations, 14 Code of Federal Regulations (CFR) Part 77, establish standards for determining obstructions in navigable airspace and set forth requirements for notification of proposed construction. These regulations require FAA notification for construction over 200 feet above ground level. Notification also is required if the obstruction is lower than specified heights and falls within restricted airspace in the approaches to public or military airports and heliports. For airports with runways longer than 3,200 feet, the restricted space extends 20,000 feet (3.3 nautical miles) from the runway. For airports with

runways measuring 3,200 feet or less, the restricted space extends 10,000 feet (1.7 nautical miles). For public or military heliports, the restricted space extends 5,000 feet (0.8 nautical mile).

The nearest public airport to the RBEP is the Zamperini Field Airport in Torrance, California, which is approximately 4 miles to the southeast. In addition, the Los Angeles International Airport (LAX) is approximately 5.8 miles north of the project site. The nearest military airport is the Los Alamitos Army Airfield, which is approximately 20 miles southeast of RBEP.

In addition to airports mentioned earlier, there are also three private heliports within 5 miles of the RBEP site. For public or private heliports, the restricted space extends 5,000 feet (0.8 nautical mile) from the heliport. The three heliports are as follows:

1. Cosmodyne Heliport 4.1 miles (east)
2. TRW Manhattan Beach Heliport 3.4 miles (north)
3. Toyota Helistop Heliport 4.6 miles (east)

5.12.2 Environmental Analysis

This section assesses the traffic and transportation effects associated with RBEP construction/demolition and operation activities. This analysis examines potential effects on roadway and intersection LOS expected during RBEP construction/demolition and operation activities.

During the peak construction period for RBEP, construction will require up to 338 workers to access and egress the project site during the AM and PM peak hours. During operations, the project is expected to require an average workforce of 21 during weekdays. To evaluate the worst-case scenario, traffic impacts associated with the peak construction period, anticipated to occur in2019, were analyzed. Based on the City of Redondo Beach's 2030 travel demand model, a 1.6 percent increase in traffic per year is predicted through full build-out of the city. The traffic model provides a tool for understanding the transportation implications of future land use. The city's 1.6 percent growth rate was applied to the 2012 traffic volumes to estimate the 2019 traffic conditions when the project will generate the greatest number of construction-related trips. The project construction traffic was added to the 2019 traffic volumes and the study area roadway and intersection LOS were calculated.

To reflect the estimated traffic conditions during project operations, the city's growth rate was applied to the 2012 volumes through 2030. The project operations traffic was added to the 2030 traffic volumes and the study area roadway and intersection levels of service were calculated.

5.12.2.1 Significance Criteria

The significance criteria have been developed using guidance provided in CEQA Appendix G (California Code of Regulations (CCR) Title 14 §15000 et seq.) and relevant local policies. Effects of RBEP construction, demolition and operation activities on transportation and circulation will be considered significant if one or more of the following criteria are met:

1. Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system
2. Exceed, either individually or cumulatively, an LOS standard established by the county congestion management agency for designated roads or highways
3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks
4. Substantially increase hazards because of a design feature or incompatible uses
5. Result in inadequate emergency access
6. Result in inadequate parking capacity
7. Conflict with adopted policies, plans, or programs supporting alternative transportation

The City of Redondo Beach service standards were applied: LOS D or better for all major, secondary, and collector streets, LOS C for local streets, and LOS E for state highways, such as PCH (City of Redondo Beach, 2008). LOS D is the criterion for intersections. Based on the City of Redondo Beach Circulation Element (City of Redondo Beach, 2009), a significant impact will result if one of the following three conditions is met:

1. 4 percent increase in the V/C ratio at an intersection when the baseline intersection condition is LOS C
2. 2 percent increase in the V/C ratio at an intersection when the baseline intersection condition is LOS D
3. 1 percent increase in the V/C ratio at an intersection when the baseline intersection condition is LOS E or worse

The intersection operations were calculated based on seconds of delay, therefore the percentage increase in total traffic volume at the intersections with the project-added traffic volume was used to assess the traffic impact, instead of the V/C ratio. Evaluating the percentage change in traffic volume is an alternative method to assessing a change in V/C. The roadway LOS was calculated based on the V/C ratio; however, the City does not have impact criteria for roadway segments, therefore, for the purposes of this analysis, the change in V/C ratio identified above was used to assess the project's potential roadway impacts.

5.12.2.2 Construction Traffic

5.12.2.2.1 Construction Trip Generation

Estimates of the project's peak construction traffic during the onsite construction period were developed based on the projected size of the RBEP construction workforce and the anticipated truck deliveries to the site. During the peak construction period for RBEP, construction will require up to 338 workers, including craft people, supervisory, support, and construction management personnel. The peak construction and demolition workforce will occur during month 37 of construction of the power block, anticipated to occur during 2019. The construction plan is based on a single shift composed of a 10-hour shift Monday through Friday, and an 8-hour shift on Saturdays. Construction will typically take place between the hours of 7 a.m. and 6 p.m., Monday through Friday, and 9 a.m. and 5 p.m. on Saturday.

Materials such as concrete, pipe, wire and cable, fuels, reinforcing steel, and small tools and consumables will be delivered to the site by truck. Some of the heavy equipment items will be transported by rail. Rail deliveries will be offloaded in the Long Beach area and transported by truck to the site. Truck deliveries of construction materials and equipment will generally occur on weekdays between 6:00 a.m. and 6:00 p.m. The peak truck deliveries will occur during month 5 when 28 trucks will be transporting demolition waste offsite.

Although the truck trips will peak during month 5 (which occurs during demolition of the existing Redondo Beach Generating Station Units 1 through 4), the peak traffic generation (workforce and truck trips combined) will occur during month 37, coinciding with the peak construction workforce. During the peak construction month, the estimated number of construction workers daily round trips is 676 (338 workers x 2 trips per worker = 676 total trips) plus 22 truck trips (11 trucks x 2 trips per truck = 22 total trips). For a conservative analysis it was assumed that none of the construction workers will carpool. Truck trips were also converted to passenger car equivalent units (PCEs) at a ratio of 1.5 passenger cars for each truck, consistent with the 2000 HCM guidelines. It was assumed that one delivery (equivalent to 2 trips) would be made during each peak hour. The construction trip estimates are presented in Table 5.12-7.

TABLE 5.12-7
Construction Trip Generation

		AM Peak Hour			PM Peak Hour		
Trip Type	**ADT**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Delivery/Haul Trucks	22	1	1	2	1	1	2
Delivery/Haul Trucks PCE (1.5)	33	2	2	4	2	2	4
Workers	676	338	0	338	0	338	338
Total Construction Traffic in PCE	709	340	2	342	2	340	342

5.12.2.2.2 Construction Traffic Distribution

Based on an analysis of the RBEP location and surrounding transportation facilities, the following assumptions were used to distribute the construction-workforce-related traffic over the study area network:

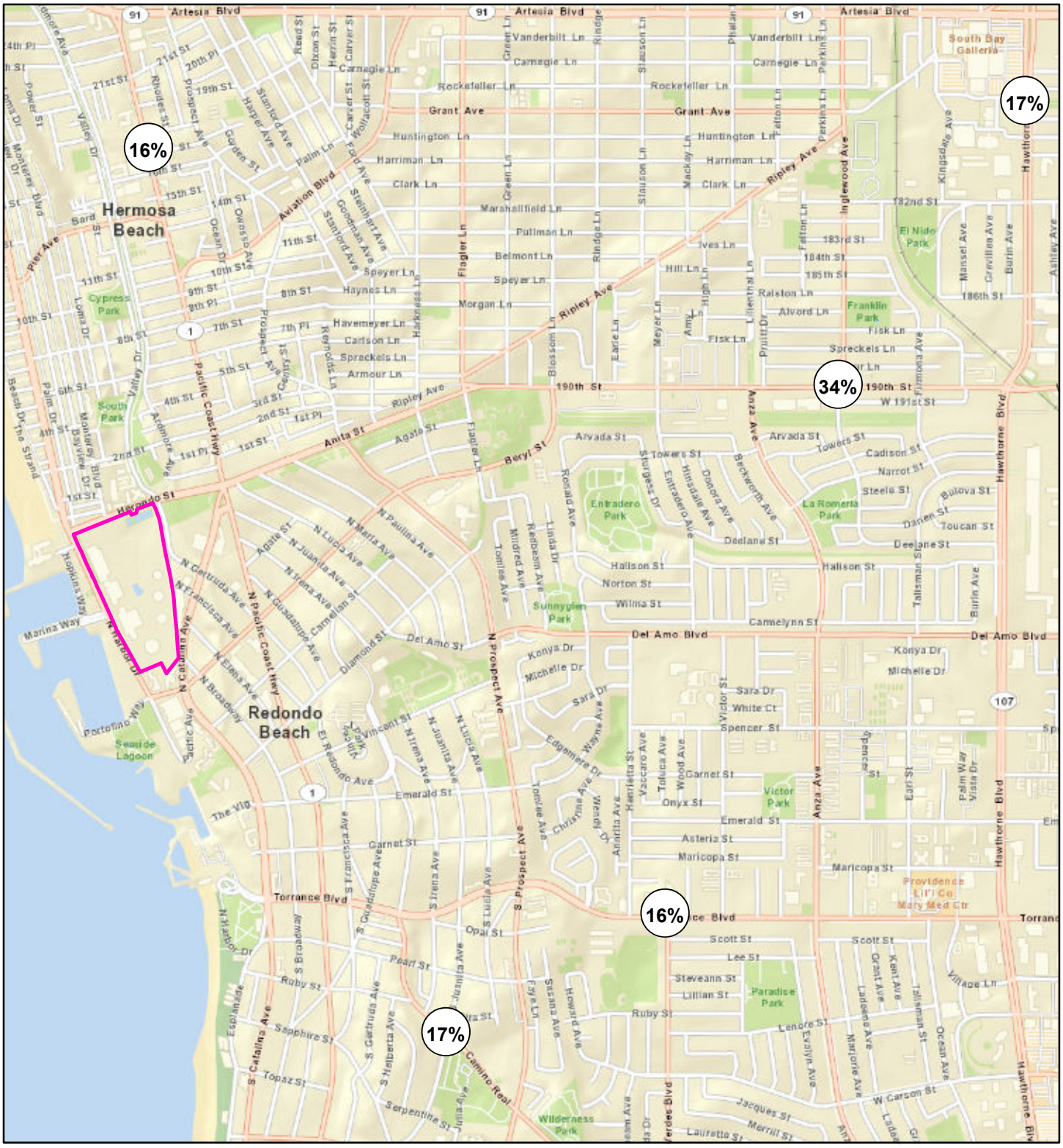
- One-third of the trips would come from San Pedro, Long Beach, and communities located southeast of the RBEP site.
- One-third of the trips would come from Torrance, North Long Beach, and communities located to the east of the RBEP site.
- One-third of the trips would come from Gardena and communities located northeast of the RBEP site.

The project trip distribution is presented in Figure 5.12-5.

5.12.2.2.3 Roadway LOS with Construction Traffic

The daily traffic volumes generated during the RBEP peak construction period were added to the estimated 2019 traffic volumes on each roadway segment and the LOS was calculated. The 2019 traffic volumes plus the construction project roadway volumes are illustrated on Figure 5.12-6.

The daily traffic volumes and resulting LOS for the study area roadway segments for the estimated 2019 baseline conditions and 2019 plus project impacts are summarized in Table 5.12-8. The segment of PCH between Torrance Boulevard and Aviation Boulevard, and the segment of Hawthorne Boulevard between Artesia Boulevard and 182nd Street are projected to operate at LOS F in the scenarios with and without construction traffic. The project will not increase the V/C ratio by more than 1 percent for roadways segments operating at LOS E or worse. Additionally, the V/C ratio for roadway segments operating at LOS D and C are estimated to increase by less than 2 and 4 percent, respectively. As such, RBEP construction traffic impacts to these roadways are not considered significant.



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Project Location

N

0 1,000 2,000 Feet

FIGURE 5.12-5
Project Trip Distribution
AES Redondo Beach Energy Project
Redondo Beach, California

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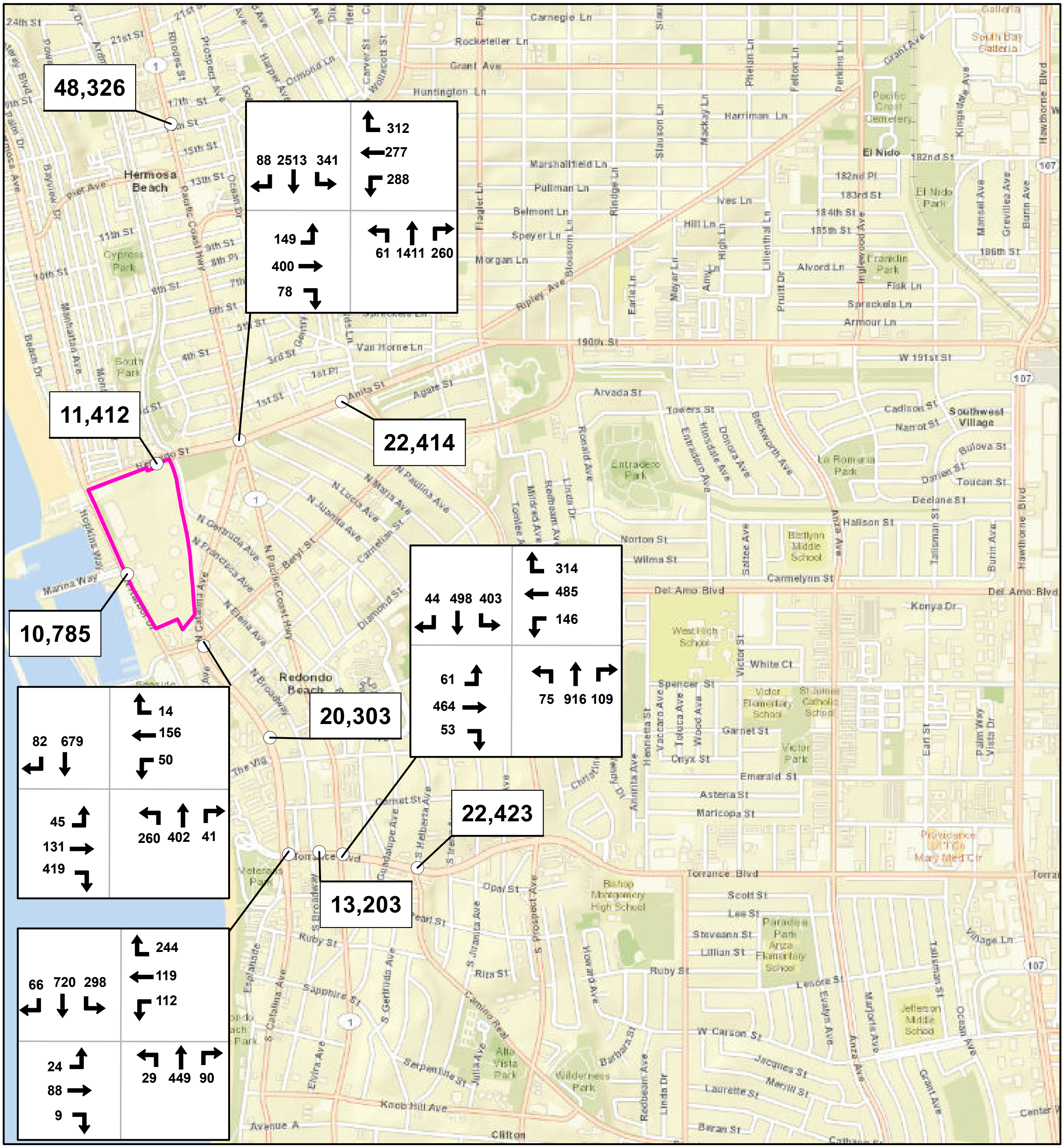


Sources:
Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap

Legend

- Study Roadway/Intersection
- Project Location
- XX Average Daily Traffic
- PM Peak Hour Turning Movement

N

0 1,000 2,000 Feet

FIGURE 5.12-6
Existing + Project Roadway ADT and PM Peak Hour Intersection Volumes

AES Redondo Beach Energy Project

Redondo Beach, California

TABLE 5.12-8
Year 2019 + Project Construction Roadway Segment LOS

Local Facilities	Between	And	Classification	Number of Lanes	Daily Vehicle Capacity	Year 2019			Year 2019 + Project				
						ADT	V/C	LOS	Construction Added Trips	ADT	V/C	LOS	Change in V/C
PCH	Hawthorne Blvd.	Palo Verdes Blvd.	Major Arterial	4	45,000	39,672	0.882	D	0	39,672	0.882	D	0.000
	Palos Verdes Blvd.	Torrance Blvd.	Major Arterial	4	45,000	35,761	0.795	C	0	35,761	0.795	C	0.000
	Torrance Blvd.	Aviation Blvd.	Major Arterial	4	45,000	53,920	1.198	F	113	54,033	1.201	F	0.003
Herondo St.	Harbor St.	PCH	Secondary Arterial	4	36,000	12,293	0.341	A	475	12,768	0.355	A	0.014
Catalina Ave.	Topaz St.	Beryl St.	Secondary Arterial	4	36,000	22,462	0.624	B	234	22,696	0.630	B	0.006
	Beryl St.	PCH	Secondary Arterial	4	36,000	17,880	0.497	A	0	17,880	0.497	A	0.000
Anita St.	PCH	Harkness Ln.	Major Arterial	4	45,000	24,697	0.549	A	362	25,059	0.557	A	0.008
W. 190th St.	Eastern City limits	Prairie Avenue	Major Arterial	4	45,000	39,113	0.869	D	362	39,475	0.877	D	0.008
Harbor Dr.	Beryl St.	Herondo St.	Collector	2	15,000	11,365	0.758	C	709	12,074	0.805	D	0.047
Hawthorne Blvd./ SR 107	Artesia Blvd.	182nd St.	Principal Arterial[c]	6	54,000	58,111	1.076	F	115	58,226	1.078	F	0.002
Torrance Blvd.	West terminus	PCH	Secondary Arterial	4	36,000	14,528	0.404	A	234	14,762	0.410	A	0.007
	PCH	Irena Ave.	Major Arterial	4	45,000	24,809	0.551	A	234	25,043	0.557	A	0.005

[a]The City of Redondo Beach Circulation Element provides capacity for Collector streets and a general statement regarding roadway capacities for Arterials. Specific capacities for Principal, Major, and Secondary Arterials were obtained from Austin-Foust Associates, Inc., 2009, and are based on standard industry practice. The ultimate capacity value is an estimate of the physical limit of daily traffic flows (LOS E) based on typical suburban peak hour characteristics. This value can vary significantly depending upon volume demand characteristics (volume of off-peak travel and duration of peak periods) as well as roadway design features (access, spacing, intersection geometrics, etc.).

[b]Existing ADT obtained from City of Torrance General Plan (2010). ADT ranged from 30,000 to 40,000.

[c]Designation obtained from the City of Torrance General Plan (2010).

5.12.2.2.4 Intersection LOS with Construction Traffic

The PM peak-hour traffic generated during the peak construction period was added to the 2019 turning movement counts at the analyzed intersections. The results of the 2019 and 2019 plus project PM peak hour LOS analysis for the study intersections are summarized in Table 5.12-9. The 2019 plus project PM peak hour intersections volumes are illustrated on Figure 5.12-7.

TABLE 5.12-9
Future (2019) + Project Construction Intersection LOS Summary

Intersection	PM Peak Hour						
	Year 2012		Year 2019		Year 2019 + Construction Trips		
	Delay (Seconds)	LOS	Delay (Seconds)	LOS	Delay (Seconds)	LOS	Percent Change in Volume*
1. PCH/Anita Street/Herondo Street	69.6	E	100+	F	100+	F	**3.3**
2. Catalina Avenue/Beryl Street	18.9	B	20.0	C	22.4	C	**4.5**
3. Catalina Avenue/Torrance Boulevard	16.9	B	17.4	B	18.8	B	4.6
4. PCH/Torrance Boulevard	67.0	E	100+	F	100+	F	**2.3**

*The intersection operations were calculated based on seconds of delay, therefore the percentage increase in total traffic volume at the intersections with the project-added traffic was used to assess the impact, instead of the V/C ratio. Evaluating the percentage change in traffic volume is an alternative method to assessing a change in V/C.

Note: Project impacts shown in **bold**.

As shown in the table, two of the study intersections will operate at LOS F and one intersection will operate at LOS C in the PM peak hour with the project-added construction traffic. The project traffic would increase the intersection traffic volume by more than 1 percent at the intersections operating at LOS F and by more than 4 percent at the intersection operating at LOS C. As such, the project traffic added to these intersections during construction would result in a significant, yet temporary impact.

5.12.2.3 Operations Traffic

5.12.2.3.1 Operations Trip Generation and Distribution

During operations, the project is expected to require an average workforce of 21 during weekdays and a maximum of approximately one delivery per day, including the six deliveries per month of hazardous materials. As a conservative estimate, the project deliveries are assumed to occur during the PM peak hour. The project trip generation during operations is summarized below. The project operations traffic was distributed over the study area network based on the same assumptions used to distribute the construction workforce related traffic. The project trip generation during operations is summarized below.

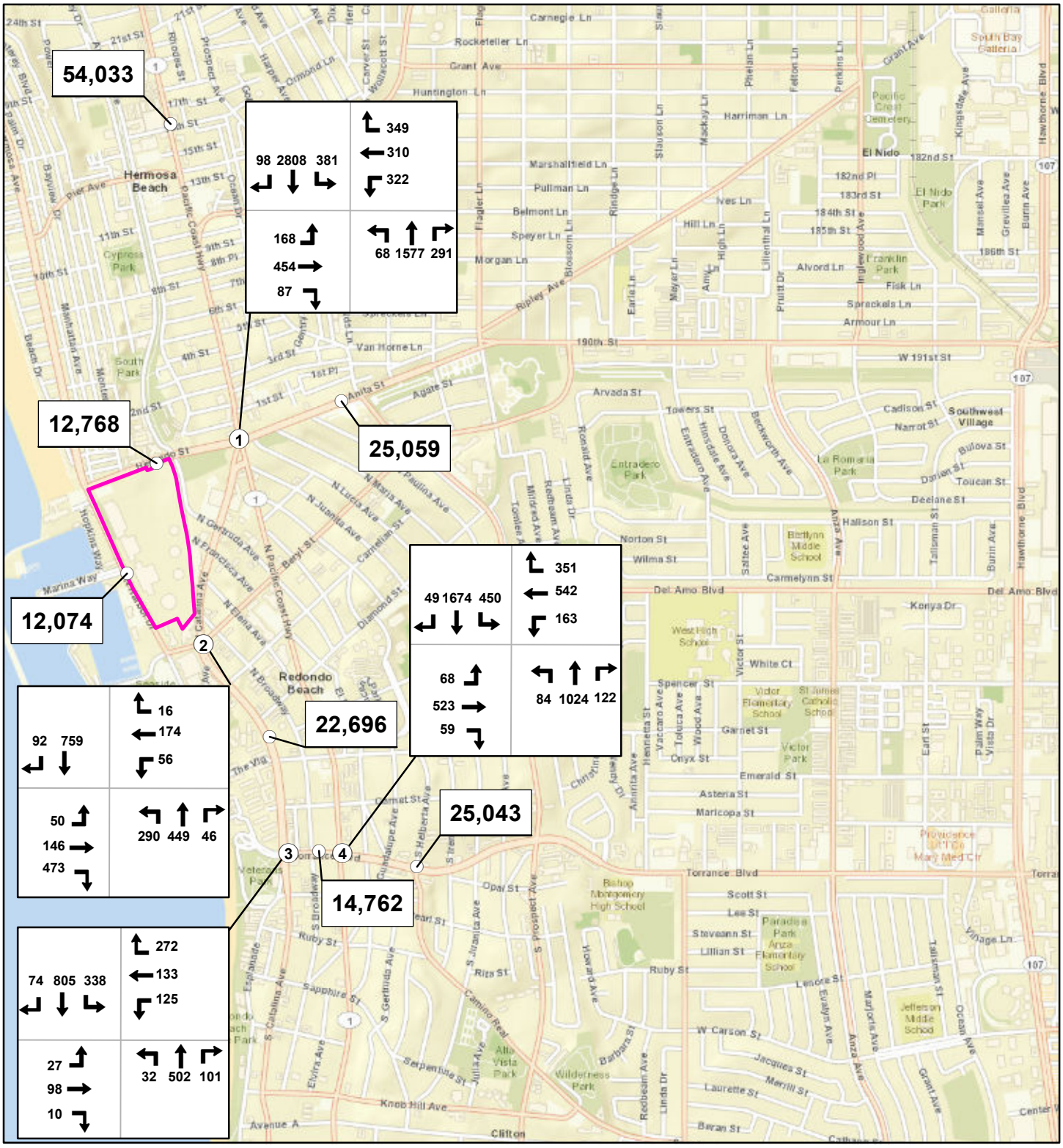
TABLE 5.12-10
Operations Trip Generation

Trip Type	ADT	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Delivery/Haul Trucks	2	0	0	0	1	1	2
Delivery/Haul Trucks PCE (1.5)	4	0	0	0	2	2	4
Workers	42	21	0	21	0	21	21
Total Operation Traffic in PCE	46	21	0	21	2	23	25

Note: PCE rounded up as conservative estimate.

5.12.2.3.2 Roadway LOS with Operations Traffic

The daily traffic volumes generated during RBEP operation were added to the 2030 traffic volumes on each roadway segment and the LOS was calculated. The 2030 plus project operations roadway volumes are illustrated on Figure 5.12-8.



Sources:
Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap

FIGURE 5.12-7
2019 + Project Construction Roadway ADT and PM Peak Hour Intersection Volumes
AES Redondo Beach Energy Project
Redondo Beach, California

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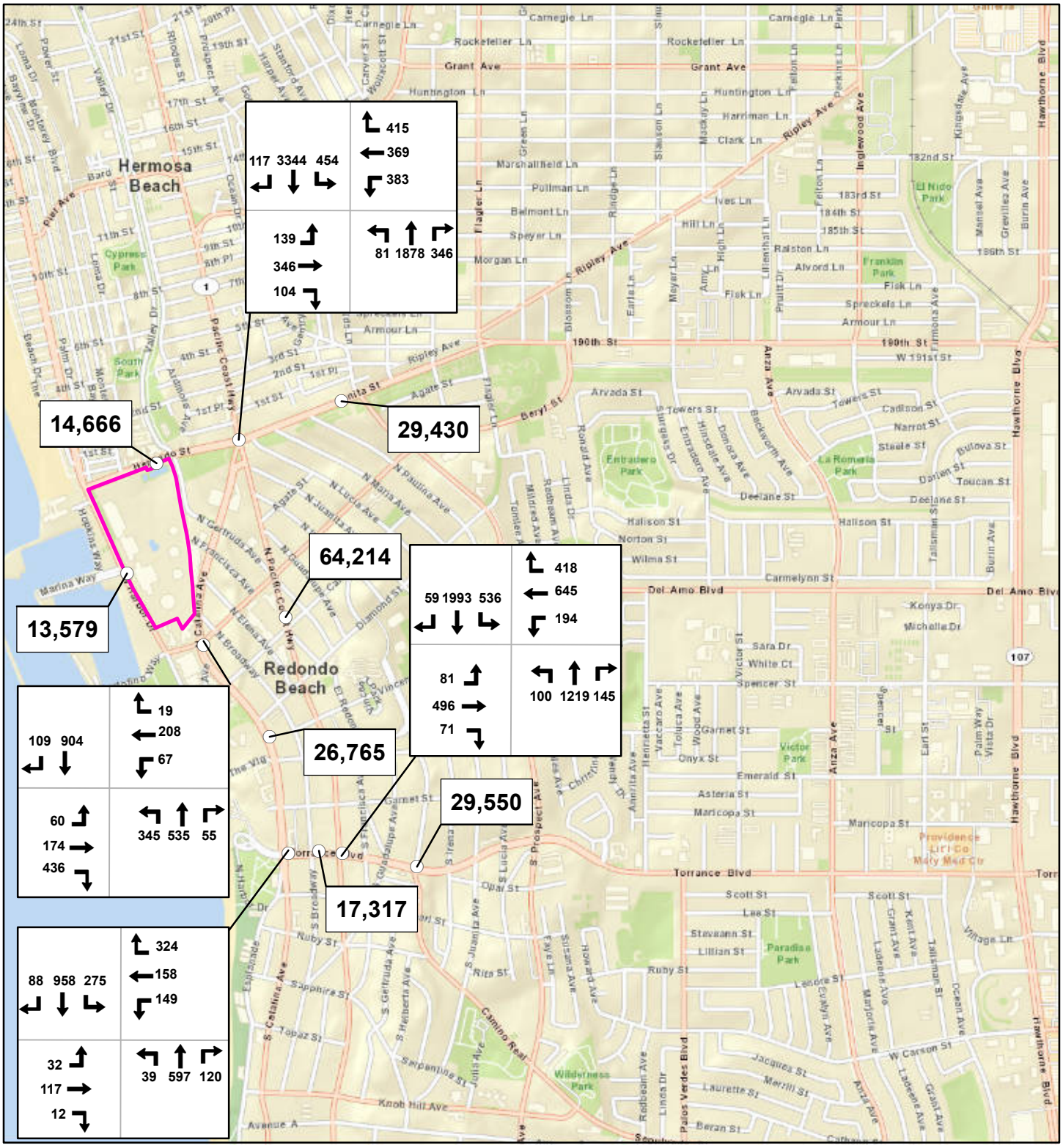

Legend

- Study Roadway/Intersection
- Project Location
- XX Average Daily Traffic
- PM Peak Hour Turning Movement

N

0 1,000 2,000 Feet

FIGURE 5.12-8
2030 + Operations Project Roadway ADT and PM Peak Hour Intersection Volumes
AES Redondo Beach Energy Project
Redondo Beach, California

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The daily traffic volumes and resulting LOS for the study area roadway segments for the 2030 and 2030 plus project conditions are summarized in Table 5.12-11. Based on the analysis, six roadway segments are projected to operate at an unacceptable LOS. The project will not change the volume to capacity ratio by more than 1 percent for any of these roadway segments or LOS. As such, the RBEP operations traffic impacts to these roadways are not considered significant.

5.12.2.3.3 Intersection LOS with Operations Traffic

The PM peak-hour traffic generated during RBEP operation was added to the 2030 turning movement counts at the analyzed intersections. The results of the 2030 and 2030 plus project PM peak hour LOS analysis for the study intersections are summarized in Table 5.12-12. The 2030 plus project PM peak hour intersections volumes are illustrated on Figure 5.12-8.

As shown in the table, two of the study intersections will operate at LOS F in the PM peak hour with the project-added operations traffic. The project traffic would not increase the intersection traffic volume by more than 1 percent at these intersections. As such, the RBEP operations traffic impact on these intersections is not considered significant.

5.12.2.4 Transport of Hazardous Materials

Some of the hazardous materials produced during demolition, construction, and operations will include oil, oily rags, lead batteries, asbestos waste, solvents, and paint. Transportation of hazardous materials will comply with Caltrans, U.S. Environmental Protection Agency, California Department of Toxic Substances Control, California Highway Patrol (CHP), and California State Fire Marshal regulations.

As currently exists for the Redondo Beach Generating Station, during RBEP operation, aqueous ammonia, a regulated substance, will continue to be delivered to the facility and transported in accordance with CVC Section 32100.5, which regulates the transportation of hazardous materials that pose an inhalation hazard. Additionally, the aqueous ammonia will only be transported along approved transportation routes. For a complete list of materials, quantities, estimated number of trips, routes, means of transportation, and any hazards associated with transport see Section 5.5, Hazardous Materials Handling, and Section 5.14, Waste Management. Hazardous waste generated at the RBEP facility will be stored at the facility for less than 90 days. The waste will then be transported to an offsite treatment, storage, and disposal facility by a permitted hazardous waste transporter.

TABLE 5.12-11
Year 2030 + Project Operations Roadway Segment LOS

						Year 2030				Year 2030 + Project			
Local Facilities	Between	And	Classification	Number of Lanes	Daily Vehicle Capacity[a]	ADT	V/C	LOS	Operations Added Trips	ADT	V/C	LOS	Change in V/C
PCH	Hawthorne Blvd.	Palo Verdes Blvd.	Major Arterial	4	45,000	47,241	1.050	F	0	47,241	1.050	F	0.000
	Palos Verdes Blvd.	Torrance Blvd.	Major Arterial	4	45,000	42,583	0.946	F	0	42,583	0.946	F	0.000
	Torrance Blvd.	Aviation Blvd.	Major Arterial	4	45,000	64,207	1.427	F	7	64,214	1.427	F	0.000
Herondo St.	Harbor St.	PCH	Secondary Arterial	4	36,000	14,638	0.407	A	28	14,666	0.407	A	0.001
Catalina Ave.	Topaz St.	Beryl St.	Secondary Arterial	4	36,000	26,747	0.743	C	18	26,765	0.743	C	0.000
	Beryl St.	PCH	Secondary Arterial	4	36,000	21,292	0.591	B	0	21,292	0.591	B	0.000
Anita St.	PCH	Harkness Ln.	Major Arterial	4	45,000	29,409	0.654	B	21	29,430	0.654	B	0.000
W. 190th St.	Eastern City limits	Prairie Avenue	Major Arterial	4	45,000	46,575[b]	1.035	F	21	46,596	1.035	F	0.000
Harbor Dr.	Beryl St.	Herondo St.	Collector	2	15,000	13,533	0.902	E	46	13,579	0.905	E	0.003
Hawthorne Blvd./ SR 107	Artesia Blvd.	182nd St.	Principal Arterial[c]	6	54,000	69,197	1.281	F	7	69,204	1.282	F	0.001
Torrance Blvd.	West terminus	PCH	Secondary Arterial	4	36,000	17,299	0.481	A	18	17,317	0.481	A	0.000
	PCH	Irena Ave.	Major Arterial	4	45,000	29,542	0.656	B	18	29,560	0.657	B	0.001

[a]City of Redondo Beach Circulation Element provides capacity for Collector streets and general statement regarding roadway capacities for Arterials. Specific capacities for Principal, Major, and Secondary Arterials obtained from Austin-Foust Associates, Inc., 2009, and are based on standard industry practice. The ultimate capacity value is an estimate of the physical limit of daily traffic flows (LOS E) based upon typical suburban peak hour characteristics. This value can vary significantly depending upon volume demand characteristics (volume of off-peak travel and duration of peak periods) as well as roadway design features (access, spacing, intersection geometrics, etc.).

[b]Existing ADT obtained from City of Torrance General Plan (2010). ADT ranged from 30,000 to 40,000.

[c]Designation obtained from the City of Torrance General Plan (2010).

TABLE 5.12-12
Future (2030) + Project Operations Intersection LOS Summary

Intersection	PM Peak Hour				
	Year 2030		Year 2030 + Operations Trips		
	Delay (Seconds)	LOS	Delay (Seconds)	LOS	Percent Change in Volume
1. PCH/Anita Street/Herondo Street	100+	F	100+	F	0.18
2. Catalina Avenue/Beryl Street	24.0	C	24.3	C	0.38
3. Catalina Avenue/Torrance Boulevard	19.0	B	19.1	B	0.38
4. PCH/Torrance Boulevard	100+	F	100+	F	0.19

Note: The intersection operations were calculated based on seconds of delay, therefore the percentage increase in total traffic volume at the intersections with the project-added traffic was used to assess the impact, instead of the V/C ratio. Evaluating the percentage change in traffic volume is an alternative method to assessing a change in V/C.

RBEP will have truck traffic associated with the delivery of various cleaning chemical, gasoline and diesel fuel, lubricants, sulfuric acid, and other hazardous materials associated with plant operation. It is expected that during RBEP operation, there will be approximately six truck deliveries per month. The truck route used to transport hazardous materials to the RBEP site will be via is I-405 (San Diego Freeway), south to Hwy. 213 (South Western Avenue), and then west along West 190th Street, which is also called Anita Street through Torrance and Herondo Street through Redondo Beach, then south on North Harbor Drive to the RBEP entrance. 190th Street is a designated truck route by the City of Redondo Beach from the boundary with the City of Torrance through to the PCH, with trucks allowed beyond on restricted streets when necessary for the purpose of making pickups or deliveries (City of Redondo Beach, 2012). Removal of hazardous wastes would occur along the same route in the reverse direction.

Compliance with applicable regulations will ensure that impacts from the transportation of hazardous materials and hazardous waste will be less than significant.

5.12.2.5 Public Safety

Truck trips, including delivery of hazardous materials and removal of wastes, pose potential hazards for the public. The transporter will be required to obtain a Hazardous Material Transportation License in accordance with CVC Section 32105 and will be required to follow appropriate safety procedures when transporting and handling such materials. There are no at-grade railroad crossings in the vicinity of the project site, or other road features that affect public safety.

5.12.2.6 Air Traffic

FAA Regulations, 14 CFR Part 77, establish standards for determining obstructions in navigable airspace and set forth requirements for notification of proposed construction. These regulations require FAA notification for construction over 200 feet above ground level. Notification also is required if the obstruction is lower than specified heights and falls within restricted airspace in the approaches to public or military airports and heliports. For airports with runways longer than 3,200 feet, the restricted space extends 20,000 feet (3.3 nautical miles) from the runway. For airports with runways measuring 3,200 feet or less, the restricted space extends 10,000 feet (1.7 nautical miles). For public or military heliports, the restricted space extends 5,000 feet (0.8 nautical mile).

The nearest public airport to the RBEP site is the Zamperini Field Airport in Torrance, California, which is approximately 4 miles southeast of the RBEP site. In addition, the Los Angeles International Airport is approximately 5.8 miles north of the project site. The nearest military airport is the Los Alamitos Army Airfield (AAF), which is approximately 20 miles southeast of RBEP.

In addition to airports mentioned earlier, there are also three private heliports within 5 miles of the project. For public or private heliports, the restricted space extends 5,000 feet (0.8 nautical mile) from the heliport. The three heliports are as follows:

1. Cosmodyne Heliport 4.1 Miles (east)
2. TRW Manhattan Beach Heliport 3.4 Miles (north)
3. Toyota Helistop Heliport 4.6 Miles (east)

As part of the analysis for the RBEP, a FAA Notice Criteria Tool has been used to determine whether RBEP meets Federal Aviation Regulation 77.13 (FAR §77.13) requirements regarding the need to notify FAA of RBEP construction. The notice criteria tool results are provided in Appendix 3B. Although all structures are well under 200 feet in height, the FAA criteria tool indicates that the RBEP stacks are located within the proximity to a navigation facility and may affect the assurance of navigation signal reception. Based on the results of this evaluation, an FAA Form 7460-1, Notice of Proposed Construction or Alteration has been filed with the FAA and is provided in Appendix 3C. See Section 3.0, Transmission System Engineering, and Section 5.6, Land Use, for additional information regarding aviation.

5.12.2.7 Emergency Vehicle Access

Emergency vehicles will be able to access the project site through the entrance off Harbor Drive. There will be no impacts to emergency vehicle access. The small changes in V/C ratio in project-area roadway segments and intersections will not have a significant impact on the operations of emergency vehicles.

5.12.2.8 Parking

Construction workers will park at the project laydown area within the project site's boundaries. No on-street parking is anticipated. Parking spaces will also be provided to employees during operations. There will be no impact to existing parking capacity.

5.12.3 Cumulative Effects

A cumulative impact refers to a proposed project's incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project (Public Resources Code § 21083; CCR, Title 14, §15064(h), 15065(c), 15130, and 15355). Cumulative traffic impacts may occur when more than one project has an overlapping construction schedule that generates excessive construction-related traffic. To assess cumulative impacts, the City of Redondo Beach uses a 1.6 percent increase in traffic per year through full build-out, which is anticipated to occur by 2030. The 1.6 percent increase is used to adjust traffic baseline conditions. The 2030 analysis of traffic congestion in Redondo Beach assumes that all land uses have been developed for maximum trip generation. The project's cumulative traffic impact was therefore already evaluated by adding the project construction traffic to the forecasted 2019 traffic volumes and adding the project operations' traffic to the forecasted 2030 traffic volumes. The roadway and intersection levels of service were calculated for each scenario as discussed in Section 5.12.2. Based on the analysis, the project would result in a significant, yet temporary impact at three of the study intersections under the 2019 plus project construction traffic conditions, potentially resulting in a cumulative traffic impact. However, with implementation of the proposed mitigation measures (discussed in Section 5.12.4), the project's traffic impacts will be less than significant. The project would not result in any significant traffic impacts under the 2030 plus project operations' traffic conditions. Therefore, operation of the project would not result in a cumulative traffic impact.

5.12.4 Mitigation Measures

5.12.4.1 Construction Impacts

The addition of RBEP construction and demolition-related traffic would not result in significant impacts to the operations at the affected roadway segments. The project would result in a temporary impact at three of the study intersections with the construction-added traffic. To reduce these impacts to a less-than-significant level, the following mitigation measure is included in the project:

- The construction and demolition contractors shall be required to prepare a Construction and Demolition Transportation Management Plan (TMP). The TMP will address timing of heavy equipment and building material deliveries, potential street or lane closures, signing, lighting, and traffic control device placement. Damage to any roadway caused by project construction traffic will be restored to or near its preexisting condition based on the procedures established by the TMP. The construction and demolition contractors will work with the local agencies to prepare a schedule and mitigation plan for the roadways along the construction routes in accordance with the procedures established by the TMP.

With implementation of the TMP, the project's impacts on traffic and transportation will be less than significant.

5.12.4.2 Operation Impacts

RBEP operations will require an average of 21 employees and a maximum of approximately one delivery per day, which is lower than the existing Redondo Beach Generating Station. Therefore, the operations-related and maintenance-related traffic associated with the project is minimal and insignificant when added to major movements on highways and local roadways. The project-added traffic will not exceed the city's traffic impact thresholds. Consequently no operations-related mitigation measures are required.

5.12.5 Laws, Ordinances, Regulations, and Standards

LORS related to traffic and transportation are summarized in the following subsections. Table 5.12-13 summarizes all applicable federal, state, and local LORS and administering agencies, and describes how the Project Owner will comply with all LORS pertaining to traffic and transportation impacts.

5.12.5.1 Federal LORS

- 49 CFR 172, 173, and 173. These regulations provide standards for labels, placards, and markings on hazardous materials shipments by truck (Part 172), standards for packaging hazardous materials (Parts 173), and for transporting hazardous materials in tank cars (Part 179). The administering agencies for the above authority are the CHP and U.S. Department of Transportation.
- 49 CFR 350-399, and Appendices A-G, Federal Motor Carrier Safety Regulations, address safety considerations for the transport of goods, materials, and substances over public highways.
- 14 CFR 77.13(2)(i) requires an applicant to notify the FAA of the construction of structures within 20,000 feet of the nearest point of the nearest runway of an airport with at least one runway longer than 3,200 feet. Torrance Municipal Airport is the closest airport to the site and is located more than 20,000 feet from the RBEP site. However as part of the analysis for the RBEP, a FAA Notice Criteria Tool has been used to determine whether RBEP meets Federal Aviation Regulation 77.13 (FAR §77.13) requirements regarding the need to notify FAA of RBEP construction. The notice criteria tool results are provided in Appendix 3B. Although all structures are well under 200 feet in height, the FAA criteria tool indicates that the RBEP stacks are located within the proximity to a navigation facility and may affect the assurance of navigation signal reception. Based on the results of this evaluation, an FAA Form 7460-1, Notice of Proposed Construction or Alteration has been filed with the FAA and is provided in Appendix 3C.

TABLE 5.12-13
Laws, Ordinances, Regulations, and Standards for Traffic and Transportation

LORS	Requirements/Applicability	Administering Agency	AFC Sections Explaining Conformance
Federal			
49 CFR, Section 172, 173 and 179	Requires proper handling and storage of hazardous materials during transportation.	U.S. Department of Transportation and Caltrans	Project and transportation will comply with all standards for the transportation of hazardous materials. (Section 5.12.2.4, 5.12.2.5 and 5.12.7)
14 CFR, Section 77.13(2)(i), 77.17, 77.21, 77.23, and 77.25	Requires an applicant to notify the FAA of the construction or alterations of structures within certain distance from an airport, in order to avoid air navigation conflicts.	U.S. Department of Transportation and Federal Aviation Administration	No airports are within 20,000 feet of the project site; However as part of the analysis for the RBEP, a FAA Notice Criteria Tool has been used to determine whether RBEP meets Federal Aviation Regulation 77.13 (FAR §77.13) requirements regarding the need to notify FAA of RBEP construction. The notice criteria tool results are provided in Appendix 3B. Although all structures are well under 200 feet in height, the FAA criteria tool indicates that the RBEP stacks are located within the proximity to a navigation facility and may affect the assurance of navigation signal reception. Based on the results of this evaluation, an FAA Form 7460-1, Notice of Proposed Construction or Alteration has been filed with the FAA and is provided in Appendix 3C. (Section 5.12.2.6)
State			
CVC §13369, 15275, and 15278	Addresses the licensing of drivers and classifications of licenses required for the operation of particular types of vehicles.	Caltrans	The project will conform to these sections in the CVC. (Section 5.12.2.4, 5.12.2.5, and 5.12.7)
CVC §32100.5	Addresses the safe transport of hazardous materials.	Caltrans	The project will conform to these sections in the CVC. (Section 5.12.2.4, 5.12.2.5, and 5.12.7)
S&HC §660, 670, 1450, 1460 et seq., 1470, and 1480	Regulates right-of-way encroachment and the granting of permits for encroachments on state and county roads.	Caltrans	The project will conform to these sections in the S&HC. (Section 5.12.1.2 and 5.12.7)
S&HC §117, 660–711	Requires permits from Caltrans for any roadway encroachment during truck transportation and delivery.	Caltrans	Encroachment permits will be obtained by transporters, as required. (Section 5.12.1.2 and 5.12.7)
CVC §35780; S&HC §660–711	Requires permits for any load that exceeds Caltrans weight, length, or width standards for public roadways.	Caltrans	Transportation permits will be obtained by transporters for all overloads, as required. (Section 5.12.1.2 and 5.12.7)
CVC §35550–35559	Regulates weight and load limitations.	Caltrans	The project will conform to these sections in the CVC. (Section5.12.1.2 and 5.12.7)
California State Planning Law, Government Code Section 65302	Project must conform to the General Plan.	City of Redondo Beach	Project will comply with the City of Redondo Beach's General Plan. (Section 5.12.2 and 5.12.4)

TABLE 5.12-13
Laws, Ordinances, Regulations, and Standards for Traffic and Transportation

LORS	Requirements/Applicability	Administering Agency	AFC Sections Explaining Conformance
CVC, 13 CCR 1160, et seq.	Provides the CHP with authority to adopt regulations for the transportation of hazardous materials in California. The CHP can issue permits and specify the route for hazardous material delivery.	California Highway Patrol	The project will conform to these sections in the CVC. (Section 5.12.2.4, 5.12.2.5 and 5.12.7)
Local			
Los Angeles County Code; Chapter 16.22 MOVING PERMITS	Requires a permit for vehicles or vehicle combinations exceeding statutory limitations (as to size, weight, and loading of vehicles) on County roadways, and roads on some local jurisdictions	Los Angeles County	The project will conform to these sections in the County code. (Section 5.12.1.2 and 5.12.7)
City of Long Beach Municipal Code	Requires a special permit for overweight vehicles (greater than 80,000 pounds, but no more than 95,000 pounds).	City of Long Beach	The project will conform to these sections in the municipal code. (Section 5.12.1.2 and 5.12.7)
City of Los Angeles Municipal Code	Requires an overload permit for vehicles or vehicle combinations exceeding statutory limitations (as to size, weight, and loading of vehicles) on City roadways.	City of Los Angeles	The project will conform to these sections in the municipal code. (Section 5.12.1.2 and 5.12.7)
Circulation Element of the City of Redondo Beach General Plan	Specifies long-term transportation planning goals and policies in the City of Redondo Beach.	City of Redondo Beach	The project will have no significant impact on the City's traffic and transportation infrastructure. (Section 5.12.2 and 5.12.4)
City of Redondo Beach Municipal Code	Title 3, Chapter 7, Article 9 of Municipal Code requires a transportation permit for haul route and oversized loads. Exceptions to designated route are allowed if trucks are going directly to a business for deliveries/pickups.	City of Redondo Beach	The project will conform to these sections in the municipal code. (Section 5.12.1.2 and 5.12.7)
City of Torrance Municipal Code	Requires a street use permit for vehicles or vehicle combinations exceeding statutory limitations (as to size, weight, and loading of vehicles) on City roadways.	City of Torrance	The project will conform to these sections in the municipal code. (Section 5.12.1.2 and 5.12.7)

S&HC = California Streets and Highways Code

- 14 CFR 77.17 requires an applicant to submit a Notice of Proposed Construction or Alteration (FAA Form No. 7460-1) to the FAA for construction within 20,000 feet of the nearest runway of an airport with at least one runway longer than 3,200 feet. Torrance Municipal Airport is the closest airport to the site and is located more than 20,000 feet from the RBEP site. However as part of the analysis for the RBEP, a FAA Notice Criteria Tool has been used to determine whether RBEP meets Federal Aviation Regulation 77.13 (FAR §77.13) requirements regarding the need to notify FAA of RBEP construction. The notice criteria tool results are provided in Appendix 3B. Although all structures are well under 200 feet in height, the FAA criteria tool indicates that the RBEP stacks are located within the proximity to a navigation facility and may affect the assurance of navigation signal reception. Based on the results of this evaluation, an FAA Form 7460-1, Notice of Proposed Construction or Alteration has been filed with the FAA and is provided in Appendix 3C.
- 14 CFR 77.21, 77.23, and 77.25 outlines the criteria used by the FAA to determine whether an obstruction would create an air navigation conflict. RBEP is more than five nautical miles from the nearest airport. Because of the distance, these requirements are not applicable.

5.12.5.2 State LORS

- CVC Sections 13369, 15275, and 15278 address the licensing of drivers and classifications of licenses required to operate particular types of vehicles.
- CVC Sections 32100.5 addresses the transportation of hazardous materials that pose an inhalation hazard. Aqueous ammonia, a regulated substance, will be delivered to the facility and transported in accordance with this section by following the designated access routes, as described previously in Section 5.12.2.2
- CVC, 13 CCR 1160, et seq. provides the CHP with authority to adopt regulations for the transportation of hazardous materials in California. The CHP can issue permits and specify the route for hazardous material delivery.
- California S&HC, Sections 660, 670, 1450, 1460 et seq. 1470, and 1480, regulate right-of-way encroachment and granting of permits for encroachments on state and county roads.
- S&HC Sections 117 and 660–711 and CVC Sections 35780 et seq., require permits to transport oversized loads on county roads. S&HC Sections 117 and 660 to 711 require permits for any construction, maintenance, or repair involving encroachment on state highway rights-of-way. CVC Section 35780 requires approval for a permit to transport oversized or excessive loads over state highways.
- Caltrans weight and load limitations for state highways apply to all state and local roadways. The weight and load limitations are specified in CVC Sections 35550 to 35559. The following provisions, from the CVC, apply to all roadways and are therefore applicable to this project.
- General Provisions:
  - The gross weight imposed upon the highway by the wheels on any axle of a vehicle shall not exceed 20,000 pounds and the gross weight upon any one wheel, or wheels, supporting one end of an axle, and resting upon the roadway, shall not exceed 10,500 pounds.
  - The maximum wheel load is the lesser of the following: (a) the load limit established by the tire manufacturer, or (b) a load of 620 pounds per lateral inch of tire width, as determined by the manufacturer's rated tire width.
- Vehicles with Trailers or Semi-trailers:
  - The gross weight imposed upon the highway by the wheels on any one axle of a vehicle shall not exceed 18,000 pounds and the gross weight upon any one wheel, or wheels, supporting one end of an axle and resting upon the roadway, shall not exceed 9,500 pounds, except that the gross weight imposed upon the highway by the wheels on any front steering axle of a motor vehicle shall not exceed 12,500 pounds.

- California State Planning Law, Government Code Section 65302, requires each city and county to adopt a General Plan, consisting of seven mandatory elements, to guide its physical development. Section 65302(b) requires that a circulation element be one of the mandatory elements.
- All construction in the public right-of-way will need to comply with the *Manual on Uniform Traffic Control Devices* (Federal Highway Administration, 2003).

5.12.5.3 Local LORS

This section reviews compliance with all relevant local LORS without regard to their applicability as a matter of law. These LORS include the following:

- Los Angeles County has permit authority for County roadways and some local jurisdictions to authorize the movement of vehicles or vehicle combinations exceeding statutory limitations (as to size, weight, and loading of vehicles) per Division 15 of the California Vehicle Code and Los Angeles County Code; Chapter 16.22 MOVING PERMITS.
- City of Los Angeles Municipal Code Section 62.137 requires an overload permit for overweight and oversized vehicles.
- The City of Long Beach's Municipal Code Section 10.41 requires a special permit for overweight vehicles (greater than 80,000 pounds, but no more than 95,000 pounds). The permit allows for travel on designated streets, and special conditions may be imposed. It may include restrictions on the number of trips, seasonal or time limitations, security, damage, and other provisions
- The City of Redondo Beach Circulation Element, which is a part of the City of Redondo Beach General Plan, sets LOS D or better for all major, secondary, and collector streets, LOS C for local streets, and LOS E for State Highways, as the minimum acceptable LOS on City roadways. The City endeavors to maintain LOS D or better for all City intersections.
- The City of Redondo Beach's requires a transportation permit from the Engineering Department before operating any heavy or oversized loads on city roads. The project will comply with the transportation permit requirements by obtaining any applicable haul route or oversize vehicle permits from the Engineering Department before operating any heavy or oversized loads on city roads.
- The City of Torrance Municipal Code Section 74.5.4. – Permit Required (Vehicle) requires a street use permit from the Community Development Department before operating any heavy or oversized loads on city roads. The permit must also be signed by the City Police Department.

5.12.6 Agency Contacts

Table 5.12-14 lists the agency contacts related to traffic and transportation.

TABLE 5.12-14
Agency Contacts for Traffic and Transportation

Issue	Agency	Persons Contacted
Transportation Permit for Oversized Loads	Caltrans	Eric Gunn Caltrans Transportation Permit Transportation Permits Office 1823 14th Street Sacramento, CA 95811 (916) 322-4116
Hazardous Material Transportation License	California Highway Patrol	Liz Silva California Highway Patrol Hazardous Material Licensing Program (916) 843-3445

TABLE 5.12-14
Agency Contacts for Traffic and Transportation

Issue	Agency	Persons Contacted
Transportation Permit for Oversized or Overweight Loads	Los Angeles County	Los Angeles County Department of Public Works Transportation Permitting Desk 900 South Fremont Avenue, 8th Floor Alhambra, CA 91803 (626) 458-3126
Overload Permit	City of Los Angeles	City of Los Angeles Department of Public Works Bureau of Street Services Investigation & Enforcement Division 1149 South Broadway Street, 3rd Floor Los Angeles, CA 90015 (213) 847-6000
Overweight Vehicle Special Permit	City of Long Beach	Wing Ma City of Long Beach Department of Public Works, Traffic and Transportation Bureau 333 West Ocean Boulevard, 10th floor Long Beach, CA 90802 (562) 570-6676
Transportation Permit for Haul Route and Oversized Loads	City of Redondo Beach	John Mate, Transportation Engineer City of Redondo Beach, Engineering Division Redondo Beach City Hall 415 Diamond Street, Door Redondo Beach, CA 90277 (310) 318-0661 John.Mate@redondo.org
Street Use Permit	City of Torrance	City of Torrance Community Development Permits and Mapping Division Torrance City Hall 3031 Torrance Blvd. Torrance, CA 90503 (310) 618-2550 CDDInfo@TorranceCA.Gov

5.12.7 Permits and Permit Schedule

Table 5.12-15 lists the permits related to traffic and transportation and the permit schedule. The vehicles used to transport heavy equipment and construction materials will require transportation permits when they exceed the size, weight, width, or length thresholds set forth in Section 35780 of the CVC, Sections 117 and 660-711 of the California State Highway Code, and Sections 1411.1 to 1411.6 of the CCRs. Affected vehicles will be required to obtain transportation permits from Caltrans, Los Angeles County, the City of Redondo Beach, and any other affected agency.

TABLE 5.12-15
Permits and Permit Schedule for Traffic and Transportation

Permit	Agency Contact	Schedule
Single/annual-trip transportation permit for oversized loads and oversized vehicles	Eric Gunn Caltrans Transportation Permit Transportation Permits Office 1823 14th Street Sacramento, CA 95811 (916) 322-4116	Obtain when necessary, 2 day processing time (single trip) to 2 weeks (annual trip).
Hazardous materials transportation license	Liz Silva California Highway Patrol Hazardous Material Licensing Program (916) 843-3445	Obtain when necessary, approximately 2-week processing time.
Transportation Permit	Los Angeles County Public Works Transportation Permitting Desk (626) 458-3126	Obtain when necessary, approximately 2-week processing time.
Overload Permit	City of Los Angeles Department of Public Works (213) 847-6000	Obtain when necessary, approximately 2-week processing time.
Oversize Vehicle and Haul Route Permits	Wing Ma City of Long Beach Department of Public Works, Traffic and Transportation Bureau 333 West Ocean Boulevard, 10th floor Long Beach, CA 90802 (562) 570-6676	Obtain when necessary, approximately 1 week processing time.
Haul Route and Oversized Vehicle Permit	City of Redondo Beach Engineering Division Tel: (310) 318-0661	Obtain when necessary, approximately 1-week processing time.
Street Use Permit	City of Torrance Community Development Department (310) 618-5990	Obtain when necessary, approximately 1-week processing time. Permit must be signed by the City of Torrance Police Department,

Transport route arrangements would be required with Caltrans and CHP officials for permitting and escort, as applicable. Transportation of hazardous materials to and from RBEP will be conducted in accordance with CVC Section 31303.

5.12.8 References

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